Understanding Your AKC® DNA Profile

Thank you for participating in the AKC® DNA Profile Program. Enclosed is an AKC® Letter of DNA Analysis containing the AKC® Profile for the dog listed. The information below is intended to help you understand, interpret, and apply the results you have received. Your DNA Profile will contain 201 SNP markers or 14 STR markers. **Any DNA submitted after December 1, 2022 will be processed with the SNP markers.**

*Please note - **the genotype for your dog does not verify his/her parentage. Parentage is only verified by comparing the DNA profiles for the sire, dam, and pup. You cannot compare Single Nucleotide Polymorphism (SNP) markers with Short Tandem Repeat (STR) markers.**

Parentage verification:

The AKC® offers a **Parentage Evaluation Service** for $50 per litter. A DNA Analyst will examine the profiles of sire, dam, and pups to issue an evaluation of the parentage. **This fee does not include the processing cost of DNA Profiles.**

You can also check parentage on your own using the Genotype Analysis Table (found in downloadable forms on our website, www.akc.org) to compare the genotypes of your dogs. Parentage of a sire/dam is considered excluded when the alleles at **two or more** markers are excluded.

How does this work?

AKC® DNA Profiles (**genotypes**) are generated using the same technology used by law enforcement agencies throughout the world. The genotype provides **unique identification** like a fingerprint, and the chance of genotypes matching is less than one in a million. In humans and dogs alike, each **gene** is present as two copies called **alleles** (displayed as letters). Offspring receive one copy of each gene from each parent in a random process. This genotyping technology does not use actual genes, but other DNA sequences referred to as **markers**, that are also inherited as one copy from each parent. The AKC® Profile Panel uses 200 SNPs and 1 gender marker or 13 STRs and 1 gender marker. The AKC® DNA Profile does not provide any information about the conformation of the dog, presence/absence of genetic diseases, or breed of dog. This proprietary panel was designed for the sole purpose of **genetic identity and parentage verification.**

Why is there an empty marker in my dog's AKC® DNA profile? Occasionally, the information at one marker on the profile will be empty. This means that the genotype at that marker could not be determined. It does not imply anything negative about your dog. The remaining markers provide enough information to establish identity and determine parentage for most cases.

How do we report gender? The last marker in the AKC® DNA Profile (labeled GEN) tests for a gene on each sex chromosome. Males will show XY and females will show XX for these markers. These gender markers provide an added level of quality control to the DNA Profile process.

What do these terms mean?

Genotype: genetic constitution or makeup
Gene: the basic unit of heredity made of DNA
Allele: different forms of a gene. Each parent contributes one allele for each gene pair
Marker: a stretch of DNA that is not a gene, but is inherited the same way as a gene
STR: Single Tandem Repeat
SNP: Single Nucleotide Polymorphism, a variant at a single base position in the DNA

AKC® DNA Operations
PO Box 900065, Raleigh, NC 27675-9065
e-mail: dnasamples@akc.org · phone: (919) 816-3508 · fax: (919) 816-4255

