

Q&A - DNA Profiling on Overview

By George Sofronidis (Managing Director – Orivet Genetic Pet Care)

DNA testing by breeders is nothing new - most breeders are aware of genetic testing and how it works. The range of diseases available for testing continues to grow and accessibility to these tests is via a simple mouth swab.

However, few breeders neglect to think about the use of DNA testing to ensure accuracy of pedigrees. Why?

“I don't need DNA to tell me who the sire is I know who it is”

Breeders tend to feel that questioning their pedigree's integrity makes it sound like you are questioning their breeding practices.

“I know my pedigree is accurate”

Breeders and the general public entrust the complete registry to our member bodies. The member body (kennel club) is the upholder of these pedigrees for all breeders they have the duty to “watch over” all pedigrees.

DNA Profiling (fingerprint) has become the norm for many kennel clubs who use this tool to ensure pedigrees remain correct. The American Kennel Club (AKC) was one of the first to take up DNA Profiling using the programme to ensure Frequently Used Sires Programme to quote the AKC. Adopted in 1998 it became a routine and used during kennel inspections.

The registry was always sacrosanct, as it should be, because Article III of the Charter and Bylaws of the American Kennel Club, Inc., is unambiguous on the subject, listing it first. “The objects of the Club shall be to maintain and publish an official stud book, to adopt and enforce uniform rules regulating and governing purebred dog events.”

The mission statement is equally clear: “The American Kennel Club is dedicated to upholding the integrity of its Registry, promoting the sport of purebred dogs and breeding for type and function.”

So why have many other kennel clubs been so reluctant to take up DNA Profiling? Here are some of the questions put to me over the last 15 years when I have proposed a DNA Programme.

Q: So how does a DNA profile work?

The basic principle is that it looks at specific sites on one's DNA and identifies these genetic sites. These sites can be as little as 14 sites or over 100 sites depending on the type of “markers” used – this is referred to as a DNA Fingerprint or Profile. A DNA Profile is unique and ONLY identical twins will share the same DNA Profile at all genetic sites. An animal inherits each one of the genetic codes from each parent – one from the dam and one from the sire. This allows you to interrogate that DNA profile and confirm parentage, dam and sire, verify any multiple sire litter, confirm any semen insemination or identify a particular animal.

Q: DNA testing is too expensive?

Costs for DNA have decreased enormously and if I was being asked to DNA profile 20 years ago I'd expect to pay over \$150. Today a whole human genome can be sequenced for just over \$300 let alone a single test. Pricing can be as little as \$50 for a single test and the platforms (technology) has advanced to allow for multiple testing at one fixed price. So a DNA profile may cost you \$50; however if this is used over its “breeding” lifetime, that dog may produce 60 puppies. That's a staggering 0.83c for each puppy!

Q: Too many dogs to do, where do I start?

If the programme is approached in a common sense way, it does not require you to test all dogs and puppies. Focus on current breeding stock. No need to worry about dogs from the past - focus on the future! If every breeding dog is profiled, then any “questionable” pedigree can be validated. Once a dog is DNA profiled you can use that profile to verify as many offspring as you want.

Q: No one tells me what to do.

This tends to be the final reason I get as to why some don't see it necessary. “I breed accurately and do not need a member body and DNA to tell me what to do”. Unfortunately, in today's consumer world this is not true. Buyers expect that the pedigree that they purchase is correct and if there is a simple tool to ensure that accuracy then it must be used. Registries have an obligation to ensure that if “modern tools” are available then they do what they can to ensure accurate registries.

“DNA testing is actually something buyers are starting to ask me about. I found that most buyers have done their research and are requesting DNA results with their purchase”

– French Bulldog Breeder (NSW)

DNA testing has allowed me to show that I am a responsible and reliable breeder. DNA testing has helped me build my breeding programme and as a breeder I want to use what tools I can to ensure healthy breeding practices.

– Australian Shepherd Breed (WA)

“It's time to get into the 21st century and DNA profile all puppies. The technology is readily available and accessible and allows you to build pedigree assurance”

– Cavalier Breeder (VIC)