



Collecting a Sample for DNA Testing

DNA testing has become the 'gold standard' for determining an individual's genetic disease status, and for confirming parentage.

The use of DNA testing is now one of the most common testing techniques used in dog breeding, providing Breeders with important information that can help them prevent significant health issues that may be present within their chosen breed, or for ensuring that the pedigree's they are basing their breeding program decisions on are correct.

Because an individual's DNA is constant throughout life, DNA tests can be used at a very young age and the result will not change over time.

This means that puppies can be tested well before they are ready to leave for their new homes, and potential breeding animals can be screened before any breeding plans are made.

How are DNA samples collected and tested?

In most cases, sampling involves collecting a small number of cells from the lining of the mouth – called a 'cheek swab'. However DNA can be collected from the cells within a blood sample, hair (root), or even from reproductive material such as semen.

Cheek swabs are generally preferred as the sample collection is not invasive and allows trained non-veterinarian collectors to be used.

In most cases, the laboratory will provide a 'kit' containing a number of cheek swabs, paperwork and appropriate packaging for the sample to be returned in, along with instructions for the Approved Collector to follow.

If the sample is not going to be a cheek swab - for example if the animal is deceased and DNA is going to be collected from frozen semen at the time of insemination - then the lab will specify how to handle, store and send the sample to ensure the best chances of a result.

Depending on the testing required, samples may be processed here in Australia or may need to be sent to an overseas laboratory.

DNA laboratories use special 'markers' along the DNA strand to determine whether animals are likely to be related to each other, whether they carry the genes for certain physical traits (such as natural bob-tails) or whether or not they carry the genetic 'potential' to develop a certain disease.

Different laboratories may use different tests or different markers to do the same testing, with many tests being patented by the scientists that have developed them.

Increasingly though, there is a trend towards international testing standards and protocols to make sharing of results from different laboratories much easier and reducing the need for re-testing.

These standards are developed through the [International Society for Animal Genetics](https://www.isag-animalgenetics.org/) (ISAG).





What is DNA Parentage Testing?

Making sure DNA results are valid

In the early days, when dog disease researchers started looking for genetic markers for disease, breeders and owners were encouraged to collect and submit samples from their own dogs with researchers relying on the breeder's honesty and motivation to find a test that could help them breed healthier animals.

Nowadays, there are collection and identification protocols that [Dogs Australia](#) has outlined to ensure that DNA test results for pure breed, pedigree dogs are '*accurate and credible*', and to prevent falsification of results.

1. The DNA sample collection **MUST** be done by approved, *independent*, trained collector

All registered Veterinarians are approved collectors, along with trained collectors that are approved by the DNA Laboratory or Dogs Australia Member Body.

The need for an *independent* collector means that an Owner or Breeder cannot collect samples from their own animals, even if they are a Veterinarian or Approved Collector.

2. The animal must be positively identified **AT THE TIME OF COLLECTION**

This means that the Collector **MUST** scan the animal's microchip and record the number against the sample on the collection form.

Alternatively, in breeds with a recognised Australia-wide based tattoo system (such as German Shepherd Dogs), the tattoo must be positively identified and recorded against the sample.

Results from tests that do not meet these two criteria are NOT considered valid by Dogs Australia, or Dogs Victoria.



Where can I learn more about DNA testing?

Depending on which laboratory you are using, there is usually a host of information about the testing and collection requirements.

There will also be information on how to prepare your dogs for sampling and some websites even have short videos of the sampling process so you can know what to expect.

The [Veterinary Genetic Laboratory](#) at the University of California Davis has a page with some simple steps and a short video, but there are plenty of others if you do a Google Search. When you are ordering your tests, check the lab's website for similar resources.