

Sampling for DNA Testing

DNA testing is an integral component of livestock breeding and animal registration programs. Highly accurate DNA tests are used to confirm the parents in the pedigree, test for genetic abnormalities, fast-track genetic progress, and are essential if estimated breeding values are to be used for selection.

Obtaining sufficient, high-quality sample is an important first step in the DNA testing process. By following the guidelines written below you can help ensure a successful DNA test result the first time. Insufficient or poor quality samples delay animal registration turnaround time and increase costs associated with resampling, resubmission and retesting at the laboratory.

Hair follicles are the preferred sample type for DNA testing. They provide the safest and most economical option for DNA testing as they are:

- ✓ Not painful or harmful to the animal when sampled;
- ✓ Simple to collect - no veterinarian is required as is often the case with blood sample collection;
- ✓ Non-invasive - do not leave a route of entry for pathogens unlike a needle point used in blood sampling;
- ✓ Easily stored at room temperature – do not require refrigeration or freezing;
- ✓ Conveniently and affordably transported to the laboratory by standard letter mail;

How to take a quality hair sample

- Make sure the goat is not wet when sampling hairs – moisture can promote mould and bacteria growth, which can cause DNA in the sample to degrade;
- Remove any dirt or debris before sampling from the animal;
- Take a hair sample from one of the following recommended areas: back of the hind leg, top of the rump, above the front knee, or from the guard hairs at the withers;
- Take a sample of 50 to 60 hairs from a clean area – hairs that are not used for the DNA test will be archived at the laboratory in case of future testing;

- Pull hairs out firmly against the direction of growth - do not cut the hairs or take a sample from broken or shed hairs; the DNA from such hairs may not be of suitable quality;
- Confirm the presence of hair follicles, the tissue bulb at the end of the hair shaft where the DNA is located. A close inspection is required for younger animals with fine hair as the tissue bulbs may be small and difficult to see;

How to store and transport hair samples

- Hair samples can be taped (over the shaft, not over the follicles/bulbs) onto a standard 8.5" x 11" piece of paper labelled with the animal identification information – this keeps the hair sampled together (Figure 1);
- Do not place hair samples in a plastic bag – this permit moisture to collect and degrades the DNA in the sample;
- Fold the paper to fit into a standard letter envelope;
- Store hair samples in a dry location at room temperature and out of direct sunlight;
- Submit samples to the laboratory using standard postal service;

Application For DNA Test Case # **028840** Date Received At Lab **NOV 20 2015**

Barcode

Test Type
SP

Applicant:
Jane Doe
123 Pretend Lane, Somewhere Ontario
Phone: 555-555-5555

Animal Information:
Goat Name: Maxxam's Finest Reg#: S9919919
Sire Reg#: S1111199
Dam Reg#: S8898899

Sample

Place Hair Roots Here (50-60 Hairs)

Tape Centre Of Shafts Here

Comments For Lab

MAIL FORM AND SAMPLE(S) TO
MAXXAM LAB
335 Laird Road, Unit 2
GUELPH
Ontario
N1H 6J3

Figure 1. Secure hair sample to paper collection kit by taping over hair shafts.

Avoiding sample contamination and mix-ups

When sampling multiple animals it is possible that samples can become mixed up or become contaminated by stray hairs. By following the tips below you can help prevent instances of sample contamination and mix-ups.

- Hands should be cleaned between animals along with any sampling tools used, for example pliers used to assist with hair pulling. If using latex gloves during sampling switch to a pair of clean gloves for each animal sampled;
- Immediately tape the collected hair sample to the paper collection kit, taping over the hair shafts to secure them to the page;
- Fold the paper hair collection kit and place in its own paper envelope to keep the sample clean and prevent contamination;

By following these simple tips you will help ensure that hair samples of adequate quantity and quality are submitted to the laboratory, contributing to a successful DNA test.