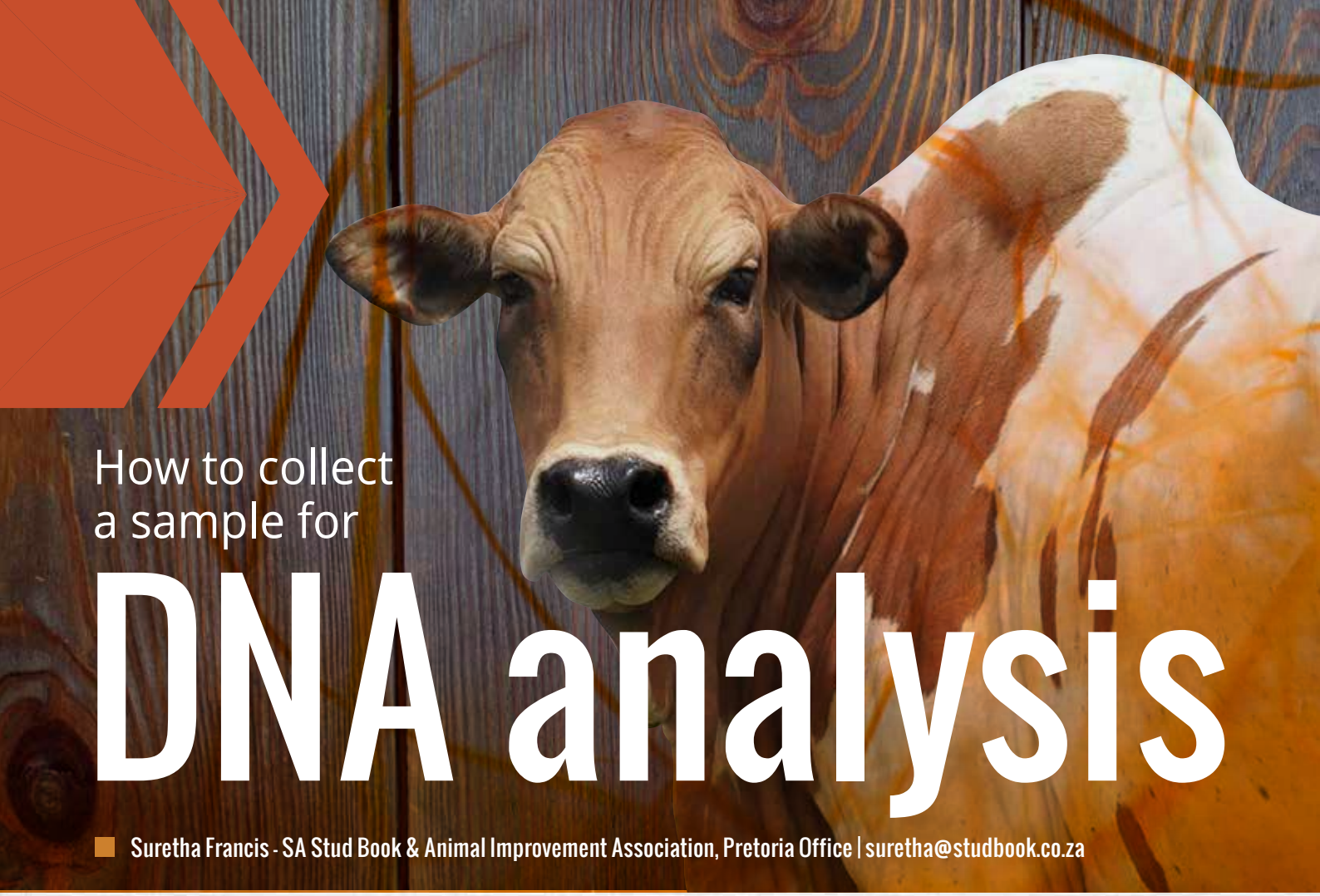

How to collect a sample for DNA analysis

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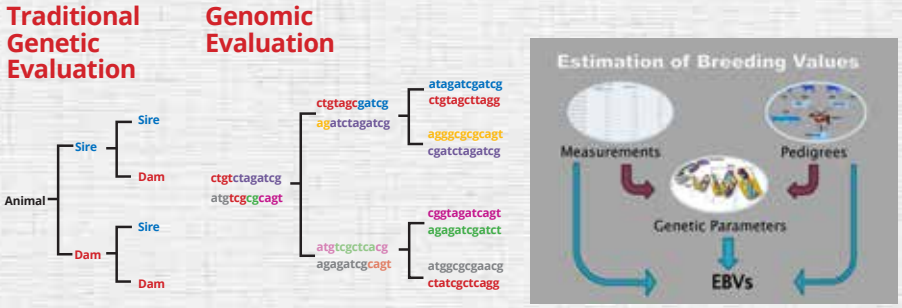
We are living in the Genomics Era. This genetic tool should assist us in accurate selection of animals already at a very young age by using genomically enhanced EBVs (GEBVs). It can also assist us in more accurate parentage verification and identification of animals that carries certain desirable/ undesirable genes.

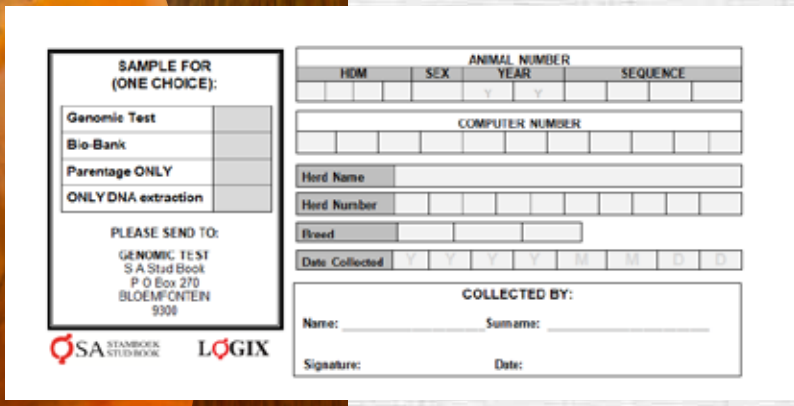


The different types of biological samples that are suitable for genotyping, of animals are blood, tissue, semen (males) and hair roots. Hair roots are the easiest to collect and manage and also the most common sample type sent to SA Stud Book for participation in the Genomic Selection Service.

Hair has several advantages over the other types of biological samples, including a lower cost involved in sample collection, as well as easier long-term storage of the samples at room temperature. One strategy becoming increasingly common is the collection of hair samples of calves at tagging / weaning, whereby the hair samples of each animals is placed in an individual paper envelope and stored in an appropriate dry place for use when genotyping is required.

It is quite important to know that the DNA is not contained in the hair shaft itself, but in the hair follicle, also known as the "Root Bulb". It is therefore very important that the hair follicles are present in the hair sample from which the DNA will be extracted. If sampling is done by cutting the hair off with scissors, no DNA will be present in the sample. It is of utmost importance that ample DNA should be present in the sample that is sent for genotyping in order to have a high concentration of DNA available for sound results.

sample of the animal goes into the correct envelope. Also indicate on the envelope if the sample is submitted for participation in SA Stud Book's Genomic Selection Service for estimation of GEBVs (Genomic Test), or only for storage in SA Stud Book's Bio-Bank for safekeeping, or for parentages testing or is the sample is submitted for DNA extraction and storage only.



Sometimes collection of hair on extremely young animals may be problematic as the hair follicles are small and still developing.

The most common mistakes made when taking samples:

1. Insufficient number of hairs collected.
2. No hair roots (bulbs) on samples.
3. Foreign matter present in the hair (eg. faeces)

Tips when collecting hair samples:

- Hair samples should be collected from the switch of the tail, by selecting at least 40 hairs (approximately the thickness of a pencil) that is dry (if it is not dry, mould and microbial growth might take place) and free of any foreign material such as faeces and any dirt. The hair must be pulled up and away from the tail switch, making sure that the roots are still attached. Pliers can also be used if a better grip is needed.
- After the hair sample has been collected, it should be placed in a paper envelope. Use a separate paper envelope for each animal and record the animal's identification and SA registration (computer) numbers on the envelope. The envelopes can be prepared beforehand, but please ensure that the hair
- Take care during the collection process to prevent cross-contamination of samples. Wash hands between collections of each hair sample to ensure that hands are clean and do not cause cross-contamination. Also ensure that the workbench is clean from any hair before taking the next sample.
- Place samples and completed paperwork in a sturdy postage bag or box. Send samples by registered mail or courier to:

SA Stud Book
Genomic Testing
Elsa van den Bergh
118 Henry Street
Westdene
Bloemfontein
9301