

DNA Frequently Asked Questions

1. What is the difference between STRs and SNPs?

- a. STRs - The proper name for STR is Short Tandem Repeat analysis. This is the old type of marker analysis that was used previously before the industry transitioned to the new SNP analysis in 2012. When a sample is tested with STR analysis there are 11-14 NUMBER markers that the lab looks at and can compare with another animal's markers to determine parent verification. As the labs have now moved to SNP analysis, **STR analysis is no longer used except on a case-by-case basis.**
- b. SNPs - The proper name for SNP is Single-nucleotide Polymorphism (often referred to as snip). This is the new type of marker analysis that is currently used in today's genetic market. Every sample submitted to either Zoetis or GeneSeek for a Genotype panel or Parentage Analysis is run on SNPs. Contrary to the STR analysis, when a sample is tested with SNPs there are 80-110 LETTER markers that the lab looks at and can compare with another animal's markers to determine parent verification.

2. My sire/dam was DNA typed back a few years ago on STRs. Why can I not compare back to that now, or why is there an additional charge to do so?

- a. When a sample is submitted for genotyping or parent verification it is run on a SNP analysis. If the sire or dam of this animal was DNA typed back several years ago and only has STRs on file they cannot be compared to the SNPs as this is two different types of markers (explained above). If possible, it is in your best interest to either submit a new sample for that parent so it can be run on SNPs, or if the sample on file is viable for additional testing to have that sample pulled and run on SNPs. If that sire or dam is no longer alive to have an additional sample submitted for SNPs and the sample on file is not viable for additional testing, then that parent cannot be compared back to the calf using SNPs. As a last resort, the calf can be run on STRs to be able to compare back to the parent but there is an additional cost for this testing and approval from BBU staff is required.
- b. If either the parent has to be run on a SNP test to compare to the calf or the calf run on an STR test to compare back to the parent there is an additional fee, as the lab now has to run a completely different test. The fee is \$15.00 for an additional STR or SNP test.

3. What is the difference between the HD and LD genotype?

- a. The High Density (HD) Genotype is a panel of 50,000-150,000 SNP markers. When your animal is run on an HD Genotype it will receive Genomic-Enhanced EPDs (GE-EPDs) and parent verification if the parents have DNA on file. **To qualify, all A.I. sires and embryo donor dams are required to be run on the HD Genotype and must be parent verified back to both sire and dam.**
- b. The Low Density (LD) Genotype is a panel of 30,000 SNP markers. This testing is currently only offered through GeneSeek. When your animal is run on an LD Genotype it will also receive GE-EPDs and parent verification if the parents have DNA on file.

4. What exactly do I get when my animal is genotyped?

- a. The first and most important thing that your animal will receive when genotyped on the HD or LD panel is GE-EPDs. GE-EPDs have increased accuracy over the general EPDs and ONLY animals that have been genotyped will receive these enhanced EPDs. Parentage Analysis is also included when having your animal genotyped, as long as the parents have DNA on file. There is no additional charge for parent verification when your animal is genotyped unless there is an issue with STR vs. SNP comparison, as discussed above. Only then would there be an additional charge to have that animal parent verified.
- b. Unlike when having an animal parent verified, there is no official report that you will receive when an animal is HD genotyped. Again, you will see the results of this test when the GE-EPDs are available. BBU will send you a confirmation report that simply states that your animals have successfully been genotyped and the information has been recorded with our geneticist.

5. What does it mean when my animal comes back as DNA disputed?

- a. When you receive a DNA report that states that your animal is DNA disputed this means that the animal either did not qualify to the dam, to the sire or to both parents. When comparing SNP markers only 1-2 DNA exclusions is allowed and if there are any more than this the animal is considered excluded to that parent. This means that the sire or dam provided is not the correct parent of the calf.

6. What is the process to resolve a DNA dispute?

- a. After receiving a DNA report that shows a DNA dispute the first step is to contact BBU. You will need to inform us of an alternate sire or dam to have the lab test against. If that parent has DNA on file to compare back to, the lab can run a re-look on your animal. If it does qualify back to that parent your next step would be to then return the certificate for the animal to have it corrected in the system. If that parent does not have DNA on file but you believe it is the only other possible option we can make the correction per the breeder's authorization but cannot record the animal as parent verified as the parent does not have DNA on file to compare back to. In this case, you would still need to return the original certificate of that animal to have the parentage corrected.

7. What if I have several different sire options that my calf could be out of? How do I apply for the DNA?

- a. If you have multiple sires that your calf could possibly be out of, DNA is the best way to accurately decipher which sire is the correct sire. You can submit a DNA sample for the calf and have it tested to the multiple sire options to see which sire qualifies.
- b. When submitting the DNA sample for the calf, on the submission paperwork you would list ALL possible sire options the calf could be out of. When the sample is submitted to the lab they will test the calf against each option, as long as that sire has DNA on file, and can tell you which sire is correct.

8. My animal qualified to both the sire and dam on an individual basis but it is excluded at the mating pair (trio)?

Why is this? How can this occur? How can I resolve the issue?

- a. This can happen in rare cases where the calf will qualify to the sire on an individual basis and the dam on the individual basis but will exclude at the mating pair. This means when the sire and dam were compared TOGETHER against the calf there were exclusion markers present. As this is a rare occurrence, it is handled on a case-by-case basis. Normally this happens because the actual sire or dam is closely related to the sire or dam that the calf was tested against. It could be a full sibling, half sibling, etc.
- b. The first step is that an alternate sire or dam option should be given to test against to see if we can get it to qualify. If the dispute is still not cleared up after trying several other options, it would be recommended that a new sample be submitted for the calf and possibly the sire and dam, if necessary.

9. How do I get sample cards to submit for DNA testing?

- a. To request DNA sample cards you can contact BBU at (210) 732-3132 or you can email someone in the office. When requesting sample cards we need to know which lab you are currently using, Zoetis or GeneSeek, how many cards you would like, and if you would like blood cards or hair cards. Normally, if you are requesting more than 50 cards at a time we will have the lab send them to you directly. When the sample cards are mailed out we also include the DNA Submission Paperwork. This is what needs to be filled out, signed and submitted with the DNA cards after the sample has been collected.