

Answers to some commonly asked questions since AHA has moved DNA testing to GeneSeek.

In June the American Hereford Association (AHA) transitioned all DNA testing to GeneSeek Inc., located in Lincoln, Neb. With this move, AHA members have more testing options while the process of requesting DNA kits and collecting samples remains unchanged.

The DNA testing process is required to get a female donor dam permitted or a

sire permitted for artificial insemination (AI). Also all Hereford sires born after Jan. 1, 2011, must be DNA genotyped at the official AHA DNA laboratory before their progeny can be registered.

Producers can continue to use DNA testing to parentage verify an animal before registering when the sire of the animal is in question or to test for genetic abnormalities.

With the move to GeneSeek, Hereford breeders now have the option to utilize a 50k panel to obtain genomic information to enhance the accuracy of Hereford expected progeny differences (EPDs). The genomic-enhanced (GE)-EPDs panel testing will help AHA continue its work of genome discovery in order to continue to find SNP markers that will enhance the accuracy of EPDs.

Listed here are answers to some commonly asked questions about Hereford DNA testing. For instructions on how to collect and submit samples see Page 102 of the July *Hereford World* or visit Hereford.org/DNATesting.

If you have more questions about Hereford DNA testing, contact the AHA at 816-842-3757.

Q: What DNA products are available?

- A:**
- 1) AHA basic panel** — \$30 per head or \$20 per head for bulk pricing
To qualify for bulk pricing breeder must order 50 or more kits and all kits must be ordered at the same time.
 - 2) GE-EPD panel** (genomic-enhanced expected progeny difference [EPD]) — \$85 per head
 - 3) AHA basic plus GE-EPD panel** — \$100 per head
Combination test that includes: basic panel and GE-EPD panel.
 - 4) Horned/polled panel** — \$48 per head
The horned/polled test only tests for the horned/polled gene. Does not identify scur genes.
 - 5) Legacy animal retest** — \$15 per head
This test is for an animal that has previously been tested utilizing microsatellite technology and needs to be retested utilizing SNP. For the first 12 months, legacy animals will receive a 50% discount on a basic panel DNA kits — \$15 versus \$30. No bulk pricing is available. All other tests for legacy animals are full price.

Q: What is the basic panel?

A: The AHA basic panel allows you to:

- 1) AI (artificial insemination) permit a sire** — This requires parent verification. If the parents were originally tested using microsatellite technology they may need to be redone using SNP technology. This qualifies them for the legacy animal retest pricing, if previously tested.
- 2) ET (embryo transfer) permit a dam** — Only a profile is required on the dam for this permit, if parents are available with a SNP panel then we will test them.
- 3) Genetic abnormality testing**
- 4) Parentage verification** — This is used when parents maybe unknown or when breeders use multiple sire pastures.
- 5) Tenderness** — This test uses the calpain markers developed at the U.S. Meat Animal Research Center (USMARC).

Q: What is the GE-EPD test?

A: The GE-EPD test evaluates the genetic merit of animals. DNA marker tests reveal the genotype of an animal for specific DNA markers for a particular trait. AHA will blend marker information with phenotypic information to produce an EPD that will allow breeders and commercial producers to select animals with less risk due to the increase in accuracy. For more information, contact Stacy Sanders or Jack Ward at 816-842-3757.

Q: What is the horned/polled panel? Does it test for abnormalities too?

A: The horned/polled test only tests for the horned/polled gene. No abnormalities will be tested for and it does not identify scur genes.

Q: How do I request test kits? In what format do I receive the kits?

A: Call AHA customer service at 816-842-3757 to request a DNA test kit. You can request your forms to be sent to you via mail, e-mail or fax. Please note: by receiving the forms via fax, the barcodes on the forms can be scrambled in the process of faxing and can cause problems at the lab.

Q: Do I need to have my calves registered prior to ordering the DNA kit?

A: No. Animals do not have to be registered, but they must at least be recorded at AHA as an unregistered animal. This gives them a unique registration number that is used to create a barcode for each kit. The decision to register the animal can be made once the DNA results are available to the breeder.

Q: Why would I need to retest a parent if they have a DNA profile on file?

A: Animals with a DNA test result prior to June 16, 2012, will have a microsatellite DNA profile. With the switch to GeneSeek we will be using SNP-DNA profiles. Therefore it may be necessary to generate a new DNA profile for parents using the SNP panel so that their progeny can be verified back to them. Most animals that have a microsatellite DNA profile already have a hair sample at the lab and it may be possible to generate the SNP-DNA profile from that existing sample. The lab will notify AHA if a sample isn't usable for generating the new profile. In these cases, a new DNA kit will be requested for the animal and sent to the member. If the parent is not available, it is possible to run a microsatellite DNA profile for the progeny to be able to conduct the parent verification.

Hereford DNA testing fees

With the move to GeneSeek Inc. as the official DNA lab for the American Hereford Association (AHA), a new fee schedule and testing options have been announced.

- 1) AHA basic panel:** The panel tests for parentage, tenderness (calpain) and genetic abnormalities — hypotrichosis (HY) and idiopathic epilepsy (IE) and dilutor — \$30 per sample/\$20 bulk rate of 50 or more.
- 2) GE-EPD panel:** Results will be blended with EPDs — \$85 per sample.
- 3) AHA basic plus GE-EPD panel** — \$100 per sample.
- 4) Horned/polled panel (stand-alone test):** This test identifies homozygous or heterozygous polled genotypes. It does not identify the scur genes. — \$48 per sample.
- 5) Legacy animal retest:** This test is for an animal that has previously been tested utilizing microsatellite technology and needs to be retested utilizing SNP — \$15 per head.

Q: What qualifies an animal for the legacy animal retest?

A: The animal must have a DNA profile on file prior to June 16, 2012. Animals can be retested to generate a SNP-DNA profile for verifying them as parents of progeny at a discounted rate through June 2013.

Q: Can I DNA profile only?

A: You can DNA profile animals for in-herd sire use, donor dam permits and legacy animals with the AHA basic panel.

Q: Which abnormalities will be included in the test?

A: Hypotrichosis (Hairlessness) — partial to almost complete lack of hair.
Dilutor — carrier animals when mated with black cattle can produce offspring with a gray, smokey or chocolate hair color.
Idiopathic epilepsy — seizures occurring from birth to several months of age (lethal abnormality).

Q: How do I need to collect my DNA sample to send in?

A: Three forms of DNA can be submitted: 1) hair; 2) semen; or 3) blood. Hair is the preferred method for DNA sampling (See "The process: Hereford testing procedures" for instructions on how to submit hair and semen). For deceased animals, bone can be submitted but there may be an additional charge for bone DNA sampling.

Q: What if I ordered a kit before the transition to GeneSeek and had not sent it to the lab? Can I now send it to GeneSeek?

A: Call AHA customer service and get the address for the new lab and use the same kit. Or if you want to upgrade to one of the new testing options, then contact AHA and request a new kit.

Q: How will I know that an animal has GE-EPDs?

A: You can search for them on the AHA website. All animals with GE-EPDs will have the GE-EPD logo on the website. **HW**