

Questions + Answers = Informed Decisions

by Larry Keenan, RAAA Director of Breed Improvement

Should I just avoid using animals that have a confirmed carrier in their pedigree?

Mass culling or selection against animals simply because they have a carrier in their pedigree can be a waste of good genetics. A more sensible action is determining if the particular animal is a carrier or free of the genetic defect through DNA testing. If an animal is free of the genetic defect they cannot pass on the genetic defect to their progeny.

Now that I have determined that I have carrier females in my herd, what options do I have in best utilizing those carrier females?

Essentially, there are three options: Cull the female, keep the female in production, or convert the female into an Embryo Transfer (ET) recipient cow. Below average carrier females would be the best candidates for culling. Superior carrier females can be bred to tested free sires to increase the probability of developing a combination of superior genetics that are free of the genetic defect. ET recipient cows do not contribute to the genetic makeup of the ET calf; therefore, carrier cows can be safely used as recipients.

In the Herd Genetic Defect Status Report, does the programming account for intervening tested free animals?

Yes. For example, if the only carrier in animal A's pedigree is their paternal grandsire and animal A's sire tested free then animal A's status will be reported as 'No Carrier Ancestry'. It is important to realize that as test results are submitted to RAAA the Herd Genetic Defect Status Report is updated; therefore, an animal can change from 'Carrier in Pedigree' to 'No Carrier Ancestry' and vice versa.

What is the best, and easiest, way to find out if a particular animal has been tested?

Searching for a particular animal in the genetic defect carrier/tested free lists is a daunting task. A dramatically easier way is to perform an 'Animal Search' for the particular animal. All genetic defect test results are located below the animal's owner/breeder information.

Is Osteopetrosis the only genetic defect that will have a major impact on Red Angus?

As many of you are aware, two genetic defects have been identified in the Black Angus population – Arthrogyriposis Multiplex (AM) and Neuropathic Hydrocephalus (NH). RAAA has always viewed Angus as Angus, regardless of hide color; therefore, we must be aware of the genetic defect status of animals that have Black Angus animals in their pedigree. However, Red Angus' exposure to AM and NH is minimal. Furthermore, other than confirmed Osteopetrosis calves, to date no abnormal calf reported to the RAAA National Office has been determined to be a genetic defect.

Which animals that have a genetic defect carrier in their pedigree should I test?

With sires having a large impact on your calf crop, it is obvious that your bull battery should be tested if they have a carrier in their pedigree. Determining which cows to test is a tougher decision and should be evaluated on a case by case basis. Calves of females that have a carrier parent must be tested as a requirement of registration; therefore, it would be wise to test those females to determine their genetic defect status. This may reduce the number of calves required to be tested. After that, a

breeder must balance risk management and economics in determining the next group of animals to test.

Will RAAA prohibit carriers from being registered, or prohibit registering progeny of carriers?

Absolutely not. RAAA's goal is to genetically describe cattle, not determine which animals should be registered.

If I have embryos in the tank out of a donor dam that is dead, should I implant them, knowing I cannot test the deceased dam?

DNA labs archive any unused portion of samples submitted. Therefore, if you had previously submitted a DNA sample on the donor dam to a DNA company for fingerprinting/parent verification you should contact the lab and request a DNA test be performed using the archived sample. In the case that insufficient sample remains at the DNA lab you will be required to DNA test all progeny of the donor dam as a requirement for registration.

I have 15 embryos from one flush in the tank in which the dam is a carrier, can I submit one of the embryos for DNA testing and determine the genetic defect status for all 15 embryos?

No. This is due to the fact that each egg and sperm receives a random sampling of DNA. Therefore, if the dam is a carrier approximately half of the eggs would contain the mutation and half would not. In such cases, you would be required to test all of the resulting calves to determine which ones are free of the mutation. ■