ANGUS
THE BUSINESS BREED

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You may have seen a recent article, originally published by Texas A&M AgriLife Extension, on several websites talking about “The unraveling of an Angus genetic mystery.” The article contained some misleading information and we’re working with Texas A&M to clear up the confusion. Until then, we’ve compiled answers to questions we’ve been asked at the American Angus Association.

What genetic mystery is the article referring to?
The article describes a situation in 2016 when nine calves were diagnosed with bovine familial convulsions and ataxia (BFCA) within days of birth. The calves experienced seizures and were unable to thrive. Upon necropsy it was revealed they had symptoms of spinal and cerebellar dysfunction and several had lesions. Parentage testing confirmed a common sire for all affected calves. Researchers then used artificial insemination to mate this sire to 36 additional cows across two herds, which resulted in 14 additional affected calves.

Through a collaboration with Dr. Tom Hairgrove of Texas A&M, Dr. Jonathan Beever of University of Tennessee, Dr. Jessica Peterson and Dr. David Steffen of University of Nebraska-Lincoln and the American Angus Association, the team was able to take the information reported by the producer, identify the phenotype, and collect DNA samples in order to investigate and identify a novel mutation that was limited to only the bull and his affected calves.

A previous article about the research published by University of Nebraska-Lincoln said, “Dominant conditions such as BFCA are often detected sooner than recessive conditions due to their notable effect in the first generation. Although the sire was culled early on due to the frequency of affected calves he was producing, the investigation provided answers for the owner as to why this occurred.”

Is this mutation in the Angus population?
While the recent Texas A&M Agrilife Extension article suggests that the condition had been previously seen, BFCA and the associated brain abnormalities is a broad pathology that can have multiple potential causes including both genetic and environmental. Dominant mutation occurs in nature and variants associated with disease are rare. Variants causing similar disease have been reported in the past and likely will occur again in the future. Therefore, although other calves may exhibit a similar phenotype, the chance that this variant is the root cause is virtually impossible. The risk is negligible and not related to this line of cattle or even the breed. The bull in question, and his affected decedents are deceased.

Can you test for this condition?
No, and there's no need to. While research done in this project did identify a mutation in this instance relating to the affected calves, it is one mutation in a larger category of cerebellar abiotrophy.

Jessica Petersen, Ph.D associate professor of animal functional genomics at University of Nebraska-Lincoln, one of the researchers on this project said, "There should be no concern of this particular variant causing issues in other cattle and no need for breeders to screen for it. If similarly affected calves are identified in the future, it would be a gene to investigate. But, it would almost certainly not be the same mutation."

Through this study the DNA sequence of 6,500 cattle were screened for this variant. No other animals were found.

Jon Beever Ph.D, another author of the study agrees. Beever is currently the director of the University of Tennessee, Institute of Agriculture, Genomics Center for the Advancement of Agriculture. "This is the same situation as the sodium channel neuropathy we identified eight years ago. It was restricted to one herd, and we made that clear when we made the report to the AAA and recommended no action be taken," he said.

What can we learn from this situation?
This case is a perfect example of how reporting abnormal calves can help researchers and the American Angus Association identify genetic conditions early. Because this was discovered, the bull in question was isolated to a single herd and the condition was not spread to other herds. If you see an abnormal calf, please fill out this form and submit it to the Association so we are able to investigate.