

# Report Abnormal Calves

*Association requests reporting of calves with certain abnormalities.*

by **AMERICAN ANGUS ASSOCIATION STAFF**

At the request of David Steffen of the University of Nebraska, the American Angus Association is asking members to

be on the lookout for two separate and distinct types of calves, specifically (1) any calves with severe hydrocephalus, and (2) any calves displaying characteristics of a condition referred to as fawn calf syndrome (FCS). Descriptions of these two types are provided below.

To further the research on these conditions, please report any suspected cases immediately upon detection so that

the Association might obtain calves for study. Calves can be reported to Don Laughlin (dlaughlin@angus.org; 816-383-5140), director of member services at the American Angus Association, who will make arrangements for them to be shipped to Steffen at the University of Nebraska for examination. DNA samples of the affected calves should go to Jon Beever at the University of Illinois. DNA of the parents should be made available for parentage verification.

“Since arthrogryposis multiplex (AM) was first reported by the American Angus Association as a possible inherited defect, breeders have stepped forward with great cooperation to report abnormal calves,” Steffen says. “This allowed Dr. Beever and I to characterize the phenotype, identify the gene and to develop a test.”

Steffen notes that with increased reporting of abnormal calves, lower-frequency conditions within populations often become apparent and warrant investigation.

“We experienced this most recently with tibial hemimelia (TH) in Shorthorns when pulmonary hypoplasia and anasarca (PHA) was discovered in the materials submitted for consideration as possible TH cases,” he explains.

## Hydrocephalus

Following the Association’s request last September for submission of abnormal calves with the AM phenotype, Steffen and Beever have received 15 reports of calves with an extreme form of hydrocephalus (see Figs. 1 and 2).

The calves are born near term and weigh 25-35 pounds (lb.) at birth, Steffen notes. The cranium is markedly enlarged (volleyball- to basketball-sized). The bones of the skull are malformed and appear as loosely organized bony plates that fall apart when the cavity is opened. The cranial cavity is filled with fluid, and no recognizable brain tissue is evident. The spinal canal is also dilated, and no observable spinal tissue is found.

Epidemiologic investigations of this condition are under way.

“We have pedigree information on 14



Fig. 1: Calf displaying hydrocephalus



Fig. 2: Calf displaying hydrocephalus

of 15 reported cases,” Steffen says. “We are examining these for relationships and using tissue to explore the genome to see if any regions are segregating with the phenotype.” One calf was a commercial calf and the full pedigree was unknown.

Several calves have been tested extensively for viral infection by the University of Nebraska and at the National Veterinary Services Laboratory (NVSL). To date, no evidence of viral involvement has been detected.

“I have seen a similar phenotype in two other breeds,” Steffen says, “so it is premature to make any conclusions as to cause. Breeders need to be vigilant in their reporting, as we do in our investigations, to identify and remove problems early on.”

### Fawn calf syndrome

Steffen says he is also monitoring a non-lethal condition referred to as fawn calf syndrome (FCS). Angus calves suspected to have FCS have been reported in Australia for many years. Researchers there have called the condition an inherited trait allegedly tracing to U.S. sires.

“If the Australian hypothesis is correct, and there is strong evidence that it is,” Steffen says, “there are almost certainly cases unintentionally not being reported in the United States.”

Affected calves are normally born alive and have a normal birth weight. Most can walk, suckle and survive, Steffen says. “The phenotype is subtle and hence FCS may not initially be recognized as an inherited defect (see Fig. 3).

“Contractures, which reduce the range of angular movement of the upper limb joints, are present at birth in FCS, but are much less severe, without rigid joint contractures,” he continues. “Due to these contractures, FCS calves at birth assume an abnormal, crouched posture, resembling an elk or deer fawn, with the feet placed more to the rear than normal, hocks pulled up and back and the spine slightly arched.

“In their first days of life, FCS calves are also flat down on their pasterns. Although there is a reduced range of movement (contracture) in the upper limb joints, particularly the hip, stifle and hock, there is an increased extensibility of the lower limb joints, particularly the pasterns. FCS-affected calves are reported as taller and more slender than their unaffected siblings.”

Steffen explains that Australian researchers say a valuable diagnostic in FCS cases is the inability to passively extend the hip, stifle and hock joints to

the normal extent by pulling downwards on the foot of a newborn calf while it is held on its side on the ground.

Affected calves can show significant recovery and usually appear relatively normal by 4 to 6 months of age, Steffen explains. As weanlings and yearlings, the FCS calves appear lighter-framed and lighter-muscled, particularly in the hindquarters. Most perform poorly and

remain tall, slender animals with poor foot conformation.

“The more normal appearance of FCS cases as mature adults makes early evaluation of the phenotype essential,” Steffen says, noting that Australian researchers have also reported the early onset of degenerative arthritis in cows that were FCS-affected as calves, particularly in the stifle joints.

If you experience a calf with either of these genetic abnormalities, please contact Laughlin as indicated at the beginning of this article as soon as possible for guidelines as to proper submission of the calf and its DNA for further evaluation.

For the most current information on these conditions, visit [www.angus.org](http://www.angus.org).



Fig. 3: Calf displaying characteristics of FCS