

Genetic Defects in Cattle

The following contains information concerning genetic defects in cattle:

Alpha-Mannosidosis Results (MA)

Alpha-Mannosidosis (MA) is an inherited and lethal lysosomal storage disease of Aberdeen Angus cattle. Affected calves are born alive with no physical deformities. Prior to reaching sexual maturity, affected animals show severe, progressive neurological disease characterized by tremors of the head, loss of muscle coordination and aggression when disturbed. The net effect is eventual death.

Arthrogryposis Multiplex Results (AM)

Arthrogryposis Multiplex (AM) was recognized as a genetic defect on September 16, 2008. Calves are born dead or die shortly after birth. The spine and legs appear crooked or twisted and the joints of the legs are often fixed in position. Front legs are contracted and rear limbs may be contracted or extended. Calves are small and appear thin due to limited muscle development. There may be a cleft affecting the nose or palate.

Contractural Arachnodactyly Results (CA)

Contractural Arachnodactyly (CA) calves are normally born alive and most can walk, suck and survive. The phenotype is subtle and hence CA may not initially be recognized as an inherited defect. Contractures which reduce the range of angular movement of the upper limb joints are present at birth in CA but are much less severe, without rigid joint contractures. CA calves 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, CA calves are also flat down on their pasterns.

Developmental Duplications (DD)

The majority of calves exhibiting Developmental Duplication (DD) are born with additional limbs, usually duplication of the front legs and originating from the neck or shoulder region. The American Angus Association (AAA) recognizes DD as a genetic condition, inherited as a simple recessive. The AAA Board adopted a policy relating to the registration status of current and future animals determined to carry this mutation. This newly-adopted policy does not require or mandate the testing of potential carriers as a precondition of continued or prospective registration. Rather, the policy assumes that members will follow sound breeding decisions and make strategic use of DNA testing in dealing with this genetic condition.

Hypotrichosis Results (HY)

Hypotrichosis (HY) is a genetic recessive resulting in partial to almost complete lack of hair. Affected calves are often born with very short, fine, kinky hair that may fall out, leaving bare spots or areas particularly susceptible to rubbing. The condition may vary in expression as the animal matures and is less noticeable in older animals. The hair coat color will sometimes appear "frosted" or "silverish." In addition the tail switch may be underdeveloped.

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Idiopathic Epilepsy Results (IE)

Onset of Idiopathic Epilepsy (IE) in Hereford cattle can be variable, ranging from birth to several months of age. Occurrence and persistence of seizures may be influenced by environmental stressors such as temperature extremes (e.g., extreme cold during calving) or increased physical activity (e.g., processing at vaccination or weaning). Upon initial onset of seizure episodes, individuals will typically lie on their side with all limbs extended in a rigid state. Manual flexing of the limbs is possible, but return to the extended position occurs after release. Seizure episodes may last from several minutes to more than an hour. Autosomal recessive.

Neuropathic Hydrocephalus Results (NH)

Neuropathic Hydrocephalus (NH) was recognized as a genetic defect on June 12, 2009. Calves that are carried are born near term and may have 25-35 pounds birth weight. Some evidence also points toward possible early abortions due to the defect. 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.

Osteopetrosis Results

Calves born prematurely (10-30 days premature). Typically calves are born dead, but if born alive will die within 24 hours after birth. Calves possess a short lower jaw and impacted molars. Long bones are fragile and can be broken with ease.