

Callipyge Gene

The executive committee has confirmed that the Callipyge mutation is present in some Southdown sheep. Those wishing to protect themselves from this mutation can have a simple DNA test run for ewes and rams that they wish to bring into their flock. Remember, rams or ewes that are carrying the gene can look perfectly normal if they received the gene from the dam or if they have two copies of the gene (one each from the sire and dam). If the animal is showing signs of unnatural muscling of the leg and rack, sloped rump, and short loin then there is a high likelihood that he or she is carrying a copy of the mutation from the ram.

A DNA test is now commercially available for \$13 per head. Gene Check will conduct a SNP (single nucleotide polymorphisms) test. This is the only reliable test to determine if the mutation exists. Tissue samples and blood work may be sent to Gene Check in the same manner as spider, hairy lamb, or scrapie tests. You may contact Gene Check at 1175 58th Ave, Greeley, CO 80634. Or by phone at (970)472-9951.

The Board of Directors of the American Southdown Breeders Association will be taking an official action on the presence of this genetic defect in the Southdown breed and all individuals with opinions or interest are encouraged to contact any or all of the Board of Directors.

“Solid Gold” or Fool’s Gold – The Callipyge Gene

In recent years a trend has been identified by a number of concerned Southdown producers regarding the sale of Southdown breeding animals and wethers that carry a genetic mutation that is characterized by muscle hypertrophy (double muscling). Breeding of this particular mutation, which was discovered over 30 years ago in Oklahoma, has far reaching implications for not only the Southdown breed but the whole sheep industry as well.

In 1983 a Dorset ram lamb was born that when bred produced excessive muscle development. The ram, who was later named “Solid Gold” was bred extensively and his offspring were scattered throughout the country. In subsequent years extensive research involving his descendants determined that the excess muscling was due to a mutated gene that was named the “Callipyge Gene”. Callipyge comes from the Greek word meaning “Beautiful Buttocks”.

In addition, the gene was found to exhibit a unique inheritance pattern termed “Polar Over-dominance”. The gene is only expressed when the offspring acquire a copy of the mutation from the sire. If the offspring acquires 2 copies of the gene (one from the dam and one from the sire), the gene **will not express itself**. If the offspring receives a copy of the mutation from the dam, the gene **will not express itself**. A ewe purchased with the double muscling trait will not produce a double muscled offspring.

When the mutation was first studied it was thought to be a great breakthrough for sheep producers because it caused a great increase in the production of lean red meat. However, subsequent research revealed that the proteins and muscle fibers in affected animals were dramatically different from normal sheep muscle. The muscle (particularly the loin muscle) in affected animals was found to be significantly less tender than normal. As a result, packers discriminate against the meat from animals that have the mutation due to concerns that the consumer will be less likely to buy lamb if this mutation is widely distributed.

In addition, while lambs born with the gene do not initially exhibit excessive muscling, reports from some breeders who have had experience with these animals feel that they are more difficult to lamb out due to the excessive muscle of the dam decreasing the diameter of the birth canal.

The ASBA Board of Directors is currently in the process of establishing a comprehensive policy regarding the Callipyge gene because the implications of allowing this gene to be distributed widely in the Southdown population are enormous. In addition, from the standpoint of registration, carrying the gene is evidence that the affected animal is not a purebred Southdown because the gene first arose in Dorsets. Currently there is no commercial test that is available to the producer to identify the gene. Identification of the mutation at this time must be done through the appearance of the animal which is very characteristic.

Below you will find a list of the implications of breeding for the mutation as well as a list of characteristics that will help you identify animals that are affected by the Callipyge mutation.

Implications of allowing the gene to proliferate within the Southdown breed:

1. Discrimination against Southdowns as a breed regarding marketability to the consumer.
2. Discrimination against Southdowns for those who do not want the gene in their flocks.
3. Disqualification of Southdowns at stock shows that exhibit the gene (Currently many stock shows across the nation disqualify individuals that exhibit the mutation).
4. Fraudulent representation of these animals by some breeders as normal, well-muscled sheep... duping uneducated buyers into purchasing a Callipyge carrier.
5. Registration issues for affected animals that are not pure Southdowns
6. Increased disputes between buyer and seller from sale of animals carrying the gene.
7. Promotion of a gene that could have negative industry wide implications
8. Potential for more difficulty during lambing.
9. Increased costs to all producers if we have to begin genetic testing for the gene in order to protect producers that do not want the gene in their flock.
10. Extreme difficulty in eliminating the gene from your herd once it has been introduced due to the irregular inheritance pattern and lack of a commercial test.

Red flags that may indicate that the gene may be present in an individual:

1. Extreme, well-defined muscling of the leg muscles, forearm, loin and rack.
2. Tendency to have a steep hip (although this cannot always be appreciated in Southdowns)
3. Be wary of flocks that tend to have some lambs that are extreme in their muscle design with the other sheep in the same flock having average to below average amounts of muscle mass.
4. These sheep tend to be marketed in the wool and when they are less than 90 days old in order to mask some of the more extreme aspects of their muscle mass. **Let the buyer beware!**
5. If you view a lamb and the muscle mass appears almost too much to be true, then be very suspicious that the lamb may be carrying the gene.