

Ectodermal Dysplasia (Hairy Lamb Syndrome)

Fact Sheet

Definition: Ectodermal Dysplasia is a genetic defect that affects the ectodermal layer of embryologic development. This layer is associated with development of skin, hair, teeth and hooves. Affected individuals have fine, white, straight hair instead of thick, crimped wool. The skin is thinner than normal with abnormal sebaceous and sweat glands. These lambs are quite frequently parrot-mouthed and often have abnormalities associated with the teeth. While some affected individuals may be vigorous at first, they are very subject to stress (temperature, docking, weaning etc...) and most die within a few days to weeks.

Genetics: ED is a simple autosomal recessive defect with only homozygous recessive individuals being affected. Heterozygous individuals (carriers) have one normal gene and one defective gene. When carriers are mated they will produce affected individuals 25% of the time, carriers 50% of the time and homozygous normal individuals 25% of the time. This gene was mapped using state of the art "SNP chip" technology that was unavailable a few years ago. It can simultaneously screen > 50,000 gene markers per animal. It is a very specific and accurate test that not only identified the gene but allowed for identification of the specific base pair on the DNA strand. This gene mutation has been associated with similar defects in over 20 known species such as: humans, macaques, gibbons pandas dogs horses tilapia and mice just to name a few.

Testing: Currently there is still not a commercial lab that has been cleared to perform the test however release of the test to these labs appears to be imminent. Currently the test is still being performed at Dr. Jon Beever's Lab at the University of Illinois. A blood sample in a purple top tube is what is needed for testing. The sample needs to be appropriately labeled as an Ectodermal Dysplasia (Hairy Lamb) sample with a return address or email so that the results can be communicated. Mailing and Contact Information is provided below. \$8 per test.

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Breeding Management: There are 4 levels of management that producers can attempt.

1. Do Nothing – high risk and potential economic loss due to increase of affected lambs
2. Low cost – Use only homozygous normal rams. Will result in no affected individuals but will not eliminate the carrier state.
3. Moderate cost – Keep homozygous normal sires, herd matriarchs and annual replacement ewes. Will eventually lead to an ED free herd over time.
4. High cost – Complete flock management eliminating from the herd all heterozygous individuals. Quickest way to ED free but is costly and may require the loss of quality genetics.