

“Z” – A New Dwarfism Mutation

Gene Check has discovered a new mutation apparently causing dwarfism. This discovery is important and may require retesting of some DNA samples, including semen:

1. The “Z” mutation is in the same gene as the “D” mutation.
2. There is not a “new” dwarf gene.
3. This mutation is of a different type than “D.”
4. When “Z” is in the gene, neither “D” nor “F” can be present in that gene.
“Z” actually removes some of the genetic code from the gene.
5. F/D testing methods cannot detect “Z”
6. Therefore, when the F/D test sees only “F” the sample is called “FF” even if the sheep is “FZ”
7. Similarly, when the F/D test sees only “D” the sample is called “DD” even if the sheep is “DZ”
8. Bad news: that means that the reported results of some F/D tests do not include “Z” when they should.
9. Good news: the “Z” mutation appears to exist in only a small number of pedigrees.
“Z” was discovered because two related rams tested “FF” by the F/D test were found to produce “DD” offspring (according to the F/D test). These rams are, in fact, “FZ” and the offspring are “DZ.”
10. Take home lesson: If you are not certain that the pedigree of a ram or semen you are using is free of “Z” be sure the ram or semen has been tested for “Z.”
- 11. Remember: Since F/D tests cannot detect “Z”, animals reported as “FF” or “DD” using only the F/D test can be “FZ” or “DZ.”**

Testing guidelines:

1. Because the “Z” mutation appears to be newly arising and restricted to a small number of pedigrees, most breeders will probably not need to test for “Z.”
2. “FD” animals cannot contain the “Z” mutation and do not need to be tested for “Z.”
3. Both “DD” and “DZ” animals will be dwarf. Unless you want to breed the animal, there is no need to test an animal tested “DD” by the F/D test for “Z.”
4. Gene Check strongly encourages breeders wanting to test sheep for “Z” to first test the sheep with the F/D test in order to insure a complete and accurate genotype.
12. Sheep that have been tested with the F/D test by Gene Check within the past 5 years, do not need to have samples resubmitted or retested for F/D – Gene Check has the DNA and can test for “Z” without a new sample.
5. Call Gene Check if you have questions.