

DNA Marker Testing: A Comparison of the Options

By Susan Willmon

Earlier this spring Merial announced the latest version of the Igenity TenderGENE[®] test for Tenderness (*see May 2006 Gelbvieh World*). With this product announcement Gelbvieh breeders have an alternative source for DNA Tenderness testing. While there are similarities between the tests offered by Igenity and Bovigen, there are also some differences in the tests and reporting methodologies. As part of the AGA's ongoing education process regarding DNA testing below is a side-by-side comparison of the products and reporting strategies for the available tests.

Tenderness Markers

Calpain: Both companies test the same two SNPs (Single Nucleotide Polymorphism) for the Calpain gene. Results from the two companies can be compared for these markers and should be identical if an animal is tested at both companies. Further discussion of the Calpain markers can be reviewed in the February 2006 *Gelbvieh World* or on the Gelbvieh website at www.gelbvieh.org.

Calpain₃₁₆

Bovigen: Depending on when you had the test performed, the result is either labeled CALP or T2. Results are reported as 0,1 or 2.

Igenity: Result is labeled as CAPN316 and is reported with the individual genotypes.

Calpain₄₇₅₁

Bovigen: Result is labeled T3. Results are reported as 0,1 or 2.

Igenity: Result is labeled as CAPN4751 and is reported with the individual genotypes.

Calpastatin: Both companies test for the Calpastatin gene, but each company uses a different SNP to point to the presence or absence of Calpastatin. Results of National Beef NBCEC validation testing on the complete Tenderness panels from both companies show similar effects for the various genotypes though the Calpastatin markers are not the same. NBCEC validation results can be found at <http://www.nbcec.org/nbcec/index.html> under the Validation tab.

Bovigen: Result is labeled CAST. Results are reported as 0,1 or 2.

Igenity: Result is labeled UofGCAST and is reported with the individual genotypes.

Quality Grade Markers

Bovigen: Reports two different genes, TG5 and M2. Results are reports as 0,1 or 2. See the April 2006 *Gelbvieh World* for a more detailed discussion of these markers.

Igenity: Currently they are not offering any markers for selection or breeding decisions as related to Marbling or Quality Grade. At one time a marker for the Leptin gene had been marketed but subsequent validation work by NBCEC led Merial to market this marker as a marker-assisted management tool primarily for use by feedlots.

Summary Scoring

Bovigen: Produces a box to the right of the individual marker values that accumulates the total number of stars indicating the total number of favorable alleles for each of the Quality Grade and Tenderness tests.

Merial: Produces a TenderGENE score, which is based on the genotypes of all three tests. The score (see Box #1) groups genotypes by the reduction in tenderness as scored by Warner Braztler Shear Force (WBSF).

When comparing the results from the two tests you *cannot* translate Merial's score to a STAR value, nor can you translate the number of STARS to Merial's score. In an effort to provide an easy means of comparing test results performed by the different companies the AGA Board of Directors has approved the standard layouts below for presentation of these results on Gelbvieh and Balancer animals. These layouts translate the results provided by each company to the common ground of Number of Favorable Alleles. As well, it provides the actual genotypes for those who wish to evaluate those values.

GW Bovigen Sample Layout A

GW Merial Sample Layout B

Forms and test kits can be obtained from both companies via their websites: www.bovigen.com or www.igenity.com. When submitting tests please include the AMG registration number and indicate if the animal is a Gelbvieh or Balancer. This will insure that animals are tracked correctly and breed statistics compiled by breed type.

There is a place on both company's forms to indicate that you wish to have these results forwarded to American Gelbvieh Association. We are working on an enhancement to our database, which will store these results in the animal's record. In the short term this data will simply be stored for reference purposes. Long term there will most likely be a Marker-Assisted EPD that will take these values into account and simplify the process of selecting the animal that will make the desired genetic progress on the trait. In the interim presenting these values in a consistent manner will insure the accurate comparison of these values between animals.

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