

DNA Testing: Can You Use it?

What is DNA Testing?

Currently there are three companies offering DNA technology: Merial-IGENITY; Pfizer – Bovigen; and MMI Genomics. DNA tests can be used as selection tools, animal identity, and detection of undesirable genes, such as BLAD, CVM, and DUMPs. Hair coat can also be determined (red / black). The AI industry has many choices between full brothers so DNA may help improve the process even before semen collection.

How do you do it? Sampling procedures

Samples of blood, hair or a nasal swab can be taken to get DNA results. In our six heifers below nasal swabs were used. A couple had to be redone as the swab was contaminated with dirt. However this was easier than expected. The kit to obtain samples had easy to follow instructions and the re-sampling was done at no cost after the initial tests results were performed.

Interpreting Results

The following chart shows the results of six Holstein heifers from the bull Dundee. The three heifers from the Jed dam are higher for productive life and have higher dairy form score, which means they are not as dairy as the three heifers from the Charles dam. However their milk yield score is higher as is their protein scores, but not fat yields. We also notice that the heifer Cracker is the only Kappa Casein BB in the group, which is know for improved cheese yield. None of these heifers are red carriers. Information on results and interpretation of number scales can be found at www.Igenity.com

Name	Prod Life	Fertility	Somatic Cell	Dairy Form	Milk	Fat	Fat %	Prot	Pro %	Kappa Casein	Coat Color
Bethany	9	7	7	6	8	3	2	8	6	AA	ED/ED
Bianca	8	6	7	6	8	3	2	7	5	BE	ED/ED
Breanna	7	6	7	6	8	3	2	7	5	AA	ED/ED
Cheerio	6	8	7	4	5	4	5	5	7	BE	ED/ED
Coco	7	8	7	4	6	5	5	6	7	AE	ED/ED
Cracker	5	5	6	5	6	6	5	6	6	BB	ED/ED

* Dundee x Jed and Dundee x Charles

How might you use it?

Currently a few sales are including this information in their catalogues for buyers to use in selection. In this case Select Sires has the same information for their Holstein bulls as they are a sister company of Igenity. So besides linear or triple A mating you could breed for corrective fertility numbers or protein numbers if you were making cheese from your milk. Of course coat color is being determined by the test as well.

Upcoming research or developments

Currently, scientists at USDA's Agriculture Research Service and other organizations are developing a genomic test for 27 traits. To obtain an accurate genetic model to make the test functional scientist are studying DNA from 5360 Holstein bulls with similar work on Jersey and Brown Swiss bulls to follow. This will improve reliabilities on several measurable traits. An example is Daughter Pregnancy Rate (DPR) from parental average reliability is 25% with the genomic test 15 % and a combined reliability of 40%. Thus our genetic improvement can be more rapid and consistent. This would not replace progeny testing but should make it more efficient. The plan is to release this genetic test information in January of 2009. Another source of information can be found on page 293 of the April 25, 2008 edition of the Hoard's Dairyman.