HORNPOLL FREQUENTLY ASKED QUESTIONS

1. What does the % likelihood figure mean?

The % likelihood figure is a reflection of the confidence in the test result. A figure of 99% means that the test is very confident that the assigned genotype status is correct: the genotype of your animal has been observed in many other animals and we have lots of data to support the assigned genotype status. A figure of 80% means the test is less confident in the result – there is a 20% chance that the result is incorrect (if you buy 5 bulls with test results of 80%, you should expect that one result will be incorrect). The likelihood figures are presented with the genotype status and should be taken into account when making decisions based on the HornPoll test results.

2. What breeds can the test be used for?

The test has been used widely across Brahman, Droughtmaster, Santa Gertrudis, Brangus, Tropical Composite, Limousin, Charolais, Hereford, Simmental & Shorthorn and gives good results in all of these breeds. The HornPoll test can be used in any breed, but for new breeds wishing to start testing, the utility of the test will depend on establishing a resource population of horned and polled animals representative of the breed. For more information on this, please contact your local Genetics Sales Representative (https://genetics.zoetis.com/Australia/).

3. Is polled always dominant to horned?

In Bos *taurus* breeds, polled is almost always dominant to horned; -PP- animals are always polled and -PH- animals are usually always polled (they are sometimes scurred). In Bos *indicus* influenced breeds, such as Brahman and Droughtmaster, this is not necessarily the case. Whilst -PP- animals are usually always polled, -PH- animals can be polled, scurred and sometimes horned. For example, an Angus bull bred to horned Brahman cows will produce offspring that all have a genotype of -PH- but can be a mixture of polled, scurred and horned. Whilst the vast majority will be polled and scurred, some horned animals are usually observed due to the influence of other genes interacting with the poll gene.

4. My bull has a test result of -PP- (99%). Does this mean that 99% of calves will be polled?

No – the figure of 99% is the confidence in this test result (that is, the test is very confident the true HornPoll status of your bull is -PP-). The proportion of polled offspring produced by this bull will depend on a number of things including (1) the breed of your cattle – are they Bos *taurus* (such as Hereford) or Bos *indicus* influenced (such as Droughtmaster)? and; (2) the HornPoll status of the cows you are breeding the bull to – are they polled or horned? See the answer to Question 3.

5. What do the ND results mean? Should I resubmit those samples for analysis?

The ND (or 'Not Determined') result is issued when the test cannot confidently assign a HornPoll status for your animal. It does not mean that the sample failed or needs to be repeated. It means the computer analysis did not yield an informative result. There is no need to resubmit the samples as this will not change the result. ND results occur when your animal carries a genotype that the test cannot confidently determine as being associated with Horned or Polled. We expect a small proportion of ND results in all breeds, but it can occur at a high frequency in breeds where only a small amount of testing has been undertaken, or in bloodlines that have not been well represented in the research population. The expected proportion of ND results for the major beef breeds are outlined in the HornPoll fact sheet available on the MLA website.

There are several things we can do to improve results if we get a large proportion of ND results in a herd. The first is to ensure that the animals tested had a phenotype (polled, scurred or horned) submitted at the time of testing. The second is to test some horned relatives from your herd to help the analysis software better identify the genotypes segregating in your population as being associated with horned or polled. Please call your local Professional Sales Representative to discuss this further.

6. Should I re-test animals that have been tested with the old version of the test?

The new version of the HornPoll test was developed to reduce the incidence of unresolved genotypes with the previous version of the test. We do not expect that an animal tested as -PH- with the previous version will change to -PP- with the new version, or vice versa. However, if an animal was issued an ambiguous or unresolved test result (e.g. HH*) with the previous version of the test, it is likely that the new version will be able to resolve this and it may be of interest to you to re-submit this animal for analysis. If you are unsure whether your old test result was ambiguous, please call your local Professional Sales Representative to discuss.

A NEW HORNPOLL TEST ASSISTING YOU IN ACHIEVING YOUR BREEDING OBJECTIVES

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FOR ANIMALS. FOR HEALTH. FOR YOU.

A new HornPoll test – helping you achieve your breeding objectives

Understanding the HornPoll status of a bull is important when determining whether a potential new bull meets your breeding objectives.

The HornPoll test is used to determine whether an animal is 'true polled' (homozygous -PP-), or is a carrier of horned genetics (heterozygous -PH-). The polled variant of the gene (P) is usually dominant to the horned variant of the gene (H), which means polled animals may be either PP or PH.

Homozygous -PP- animals will always pass a copy of the polled variant to their offspring, increasing the likelihood that the offspring will be polled. Identifying breeding animals that carry two copies of the polled variant will dramatically reduce the requirement for dehorning in subsequent generations.

Genotype	Status	Explanation
PP Homozygous Polled	Polled	This animal possesses two copies of the polled variant of the gene. This animal is highly likely to be polled and will always pass a poll variant to its progeny.
PH Heterozygous Polled	Carrier	This animal carries one copy of the polled variant and one copy of the horned variant of the gene. This animal is likely to be polled but in some instances may be scurred or horned. This animal will transmit either the horned or polled variant to its progeny.
HH Homozygous Horned	Horned	This animal carries two copies of the horned variant of the gene. This animal is highly likely to be horned and will always transmit the horned variant to its progeny.

A new test available to more breeds

An improved version of the HornPoll test has been launched and the test can now be used with greater confidence across a range of temperate and tropical breeds produced in Australia. The genotype result will be issued with a Likelihood score that reflects the level of confidence in the assigned genotype status. Below is an example of how the results will be reported:

Animal Details	Test	Genotype	Status	Likelihood	Explanation
Animal ID/Tag: H280 Breed: Santa Gertrudis Barcode: 12392390 Sample Type: Hair	HornPoll	PP	Polled	99%	There is a 99% probability this animal carries two copies of the poll variant of the gene.
Animal ID/Tag: H248 Breed: Santa Gertrudis Barcode: 12392391 Sample Type: Hair	HornPoll	PH	Carrier	91%	There is a 91% probability this animal carries one copy of the poll variant of the gene.
Animal ID/Tag: H28 Breed: Santa Gertrudis Barcode: 12392394 Sample Type: Hair	HornPoll	HH	Horned	95%	There is a 95% probability this animal carries no copies of the poll variant of the gene.
Animal ID/Tag: H132 Breed: Santa Gertrudis Barcode: 12392399 Sample Type: Hair	HornPoll	ND	ND	ND	The HornPoll status of this animal could not be accurately determined.

The ability of the HornPoll test to assign a genotype status to an animal varies between breeds. In some instances, a result of ND or 'Not Determined' will be issued. The proportion of ND results expected ranges from 1/10 to 1/30 animals tested. More information on this can be found on the MLA Fact Sheet available at http://www.mla.com.au/About-MLA/News-and-media/Media-releases/New-and-improved-poll-gene-marker-test-launched.

Below are examples of matings which may occur on farm. The use of PP bulls over horned cows will significantly reduce the need for dehorning in the resulting offspring.

	Bull		
Cow		P	P
	H	PH	PH
	H	PH	PH

A PP bull joined to HH (horned) cows will result in all offspring being PH (polled or scurred)

	Bull		
Cow		P	H
	H	PH	HH
	H	PH	HH

A PH bull joined to HH (horned) cows will results in 50% of offspring being PH (polled or scurred) and 50% of offspring being HH (horned)

Samples

The HornPoll test can be performed using hair, semen or other tissue type regularly used for DNA analysis. Hair is the most common tissue type for testing. Please contact our Customer Service team to receive your hair collection kits and order form.

When submitting samples for analysis, it is important to indicate whether the animals being submitted for testing are polled, scurred or horned. Providing this information will assist in increasing the proportion of animals for which the test returns a definitive result.

For more information on the HornPoll test and how to get an animal tested, please contact your local Genetics Professional Sales Representative:

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