



What are Genomics?

Genome: the genetic material of an organism

Genomics: the study of the genome

Genotype: the full genetic makeup of an animal

SNP: single nucleotide polymorphism referred to as SNP's (pronounced SNIPS) are DNA markers

DNA is extracted from the hair sample provided, and the DNA is run on a SNP panel. Herefords Australia utilise 3 different kinds of SNP panels:

- GGPHD 150k – 150,000 SNP DNA markers
- GGPLD 40k – 40,000 SNP DNA markers
- SEQI – 140 approx. SNP DNA markers

The GGPHD and the GGPLD are both classed as genomic tests, and used to obtain the genetic makeup of an animal. Within the total number of SNP markers looked at, we can extract certain sections that look at specific traits and genetic conditions. The information then allows us to calculate an animal's genetic merit due to the large number of SNP markers available.

A SEQI is a standalone DNA test that just looks at the SNP markers within a DNA sample. This is sometimes referred to as a DNA extraction. These markers are compared when conducting parent verifications to determine the sire and/or dam of an animal. Due to the small number of SNPs in a SEQI, it is not useful for looking at genetic conditions or trait markers.

Microsatellite, also referred to as a MIP, has a very small number of markers (21 max) and are run on a different testing platform. Due to this, an animal on a MIP profile cannot be compared to an animal on a SNP profile for parent verification. It is strongly encouraged that any active animal on a MIP profile be upgraded to a SNP profile for any future parent verifications, or a genomic test, to examine genetic conditions or specific traits.

How to select the right DNA test for you?

The most appropriate DNA test for you and your operation will come down to several things:

- The animal being tested: is this a calf you wish to PV? A herd sire? An AI sire or is it a cow you wish to flush for embryos?
- What information do you wish to gain from conducting the test?
- Does the DNA test you are requesting meet the most current regulations?

What will Genomics tell me?

The GGPHD and GGPLD calculate genomic predictions for over 20 traits, including Calving Ease, Milk, Average Daily Gain, Residual Feed Intake, Marbling, Docility and Carcase Weight.

Also included in the GGP tests are the 3 genetic condition, Hypotrichosis, Dilutor and Idiopathic Epilepsy.

Animals that undergo a GGPLD or GGPHD will be parent verified to their sire, in the event that the sire has a SNP profile to compare to.

How do Genomics help me?

SNP genotypes, along with pedigree information and performance information are incorporated into the calculation of BREEDPLAN EBV's. They assist in increasing the accuracy of an animals EBV figures, by combining observed trait data, pedigree performance data and the genomic predictions. Genotype testing your animals will also benefit those related to them. Genomic enhanced EBV's will improve the overall accuracy of our EBV's, allowing you to make selection decisions with better peace of mind and certainty.



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