

First Report on Calibration of Pfizer HD 50K product for Australian Angus

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on behalf of AGBU, Angus Australia, and Pfizer Animal Genetics

*In an outstanding example of collaboration for the benefit of the beef industry, Pfizer Animal Genetics (PAG), Angus Australia, Animal Genetics and Breeding Unit (AGBU) and MLA are working together on the calibration of the new Pfizer High Density Angus SNP chip product (HD 50K) for **Australian Angus** cattle and production conditions. This calibration analysis is based on Australian Angus sires with MVPs, on their EBVs and the performance of their recorded grand-progeny.*

The product assesses animals' genetic makeup at some 50,000 chromosome locations or SNPs (single nucleotide polymorphisms), and then predicts an animal's genetic merit for particular traits based on that assessment. To do this, PAG have previously conducted "discovery" research in Angus cattle populations to determine which of the 50,000 SNPs has a significant effect. These are then combined into measures of merit, branded as Molecular Value Predictions, or MVPs, by PAG.

In the phase of work now underway, data from Australian and New Zealand Angus cattle is being analysed: those cattle include - sires that have been DNA tested and for whom MVPs are available, and a large sample of their grand-progeny from the Australian and New Zealand Angus database which have actual measures of performance.

By comparing the MVP of the sires with the actual performance of their descendants, the project is calibrating the Pfizer MVP test for Australian Angus cattle under Australian conditions. The results obtained will be a more reliable guide to the usefulness of the MVP than any results from other breeds or overseas data.

The key result is the accuracy of the MVP – how well it correlates with actual measured performance. These accuracies will be made publicly available from the AGBU analysis, and in addition are a critical parameter for including MVP results into BREEDPLAN EBVs. This is a very important step for users – ensuring that breeders and producers can get the most accurate guide to an animal's genetic merit – which is what the combination of pedigree, performance and MVP achieves. Not integrating the MVP with the other data sources into BREEDPLAN EBVs will leave users short of the full picture. All partners in this work are committed to the goal of enabling and encouraging the incorporation of MVPs into BREEDPLAN EBVs.

The collaborative effort has already generated parameters for 7 out of the 9 traits for which Pfizer has produced MVPs and which already exist in BREEDPLAN with the two calving ease traits requiring additional time as they are more complex technically. These parameters now enable these traits to be included into BREEDPLAN to produce marker assisted EBVs and Angus Australia is supporting the production of these new generation EBVs. The transition across to marker assisted EBVs will take some time, though the first trial marker assisted EBVs are expected to be available by September-October this year.

The results obtained to date are promising – the accuracy of the MVP for the 7 traits for which results are available is in the range 0.30-0.44. Further work is now examining the correlations amongst MVP, and between MVP for one trait and the phenotype for other traits. At this stage it is not possible to predict whether the accuracies will change at all with further data – they are the best estimates possible given the existing data.

The work underway takes our understanding forward, with benefits for Pfizer, who get a more accurate picture of the benefits delivered by their products, Angus Australia and their members, who can make decisions regarding the use of MVPs with greater confidence, and the industry, which can aim for most cost-effective introduction of this exciting new technology.

The scientific work of the AGBU team is vital to the project, as is the close cooperation between all four parties. This is a very positive sign for industry, and reinforces the preparedness of different groups to work together for maximum benefit of the beef industry.

The project partners will continue to release information on project outcomes over the coming weeks.