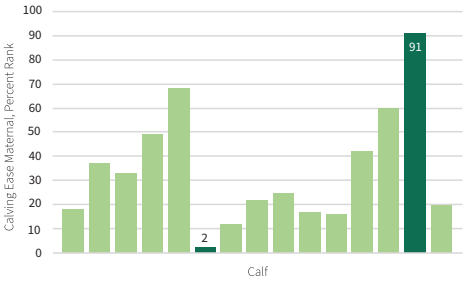
Your Herd is Covered

GGP 100K

Just because two bulls share the same sire, they aren't necessarily equals

The graph to the right shows the percent rank for 15 calves all sired by the same bull. The dark green bars show that one calf ranks in the top 10% for calving ease maternal (CEM) while another half sibling is in the bottom 10%.



How does this happen?

- There are 1 billion possible combinations from a sire
- There are another 1 billion possible combinations from a dam
- 1 billion x 1 billion = 1 quintillion possible combinations of genes in a full sibling calf crop

Accuracy of an EPD is critical

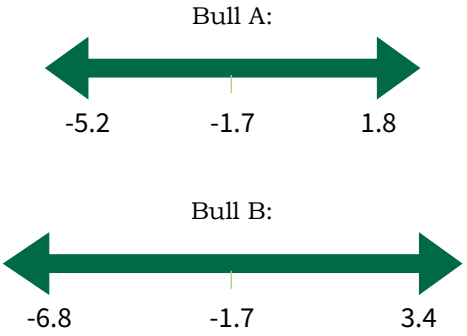
Expected progeny differences (EPD) are based on proven mathematics, but are always an estimate of an animal's genetic merit. No matter how perfect the math, their "true" breeding value is never known. This is why accuracy is so important. The higher the accuracy, the closer an EPD is to the "true" value. Below is an example of what this means.

BW	BW
-1.7	-1.7
0.39	0.15
3%	3%
Bull A	Bull B

The birth weight (BW) EPD information provided belongs to two different yearling Simmental bulls. Notice:

- Bull A had been genotyped while Bull B had not
- They have the same EPD and percentile rank for BW (-1.7 lbs and 3%)
- The accuracy is higher for Bull A than Bull B

As more progeny information comes in, EPDs for animals fluctuate. The diagram to the right shows the possible range of "true" EPDs for both bulls. Notice how much smaller the range for Bull A is compared to Bull B. That is due to the increased accuracy of the prediction for Bull A.



With genomic testing, you get increased accuracy and can buy or sell a heifer bull knowing he's a heifer bull.

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Why GGP?

It's got you covered.

The genome of a cow consists of over 3 billion markers. With GGP, we ensure the markers are not missing anything important:

- Better Spacing - 100,000 SNPs to span the entire bovine genome with an average spacing of 29,000 markers.
- Higher Density - GGP coverage is higher density. In the image provided, darker color means more markers have been placed in that area of the genome.

Think of it this way

To get the best yield, corn seeds are planted evenly and as close together as possible. This ensures the proper spacing and density that will provide the best return on investment. The same concept applies to genotyping.

It includes all the right information.

They're specifically chosen to be the right SNP for use in a variety of beef breeds.

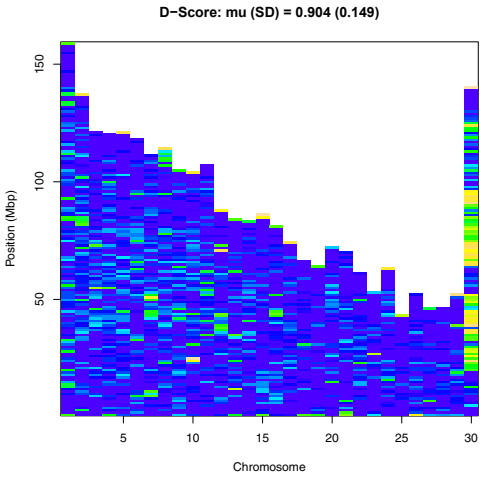
What is Minor Allele Frequency?

- Measure of variation
- Ranges from 0 - 0.5
- Higher MAF = more informative SNP

Think of it this way

This is the best technology for ranchers to make the most confident selection and breeding decisions.

GGP Bovine 100K SNP Density Map



Angus	Beefmaster	Brangus	Gelbvieh	Hereford	Limousin	Red Angus	Simmental	Average
0.30	0.30	0.30	0.33	0.28	0.31	0.30	0.33	0.31

It helps your bull buying customers

GGP Bovine 100K provides the most confidence when selling bulls. This helps your commercial customers on their operations, and upholds your reputation as a reliable source for superior genetics.

It helps your heifer selection

Using the same technology for females will continue to increase genetic improvement for years to come.

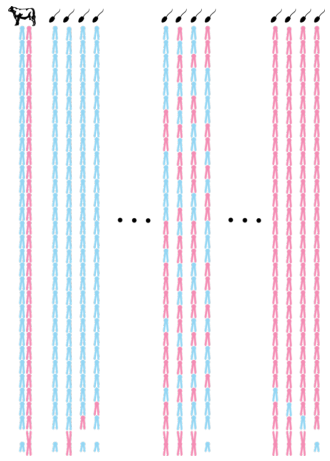


Image: eBEEF.org (2014) The Random Shuffle of Genes: Putting the E in EPD

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