



Pfizer Animal Health
Animal Genetics

The Evolution Of GeneSTAR



GeneSTAR[®]

Outline

- Pfizer's vision and commitment to industry
- The evolution of GeneSTAR
- How will next generation products be different?
- Examples

GeneSTAR®

Pfizer Animal Genetics Vision



- Revolutionising the livestock industry through integrated genetic solutions
- Best science, best support, best value
- How do we get there?



Pfizer's Commitment to the Industry

- Invest in the very best global research
- World class internal product development program
- We are listening to learn – This is why we are here today!
- Demonstrate and communicate value
 - Validation studies
 - Technical support
 - Focus groups and industry advisory panels



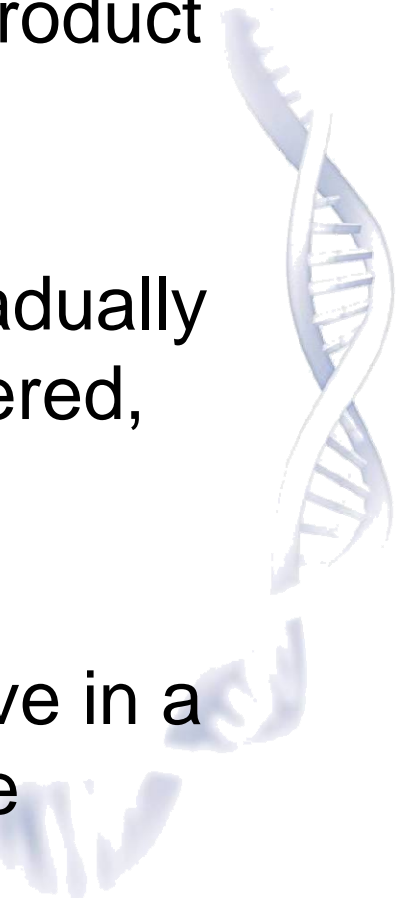
Approach

■ Approach

- Solutions not simply tests
- Value of markers is in panels, not as individual markers
- Panel predictions for genetic improvement and phenotype across breeds
- Tools for using the technology and for education
 - Economic modeling, MA-EBVs, desired gains, dashboard tools
- Working with the industry to continually improve our products
- Adopting a new approach to reporting results – ensure future products are complimentary

From STARs to Molecular Value Predictions



- Pfizer Animal Genetics GeneSTAR product has been in existence for 9 years
 - Over time product refinement has gradually increased the number of markers offered, currently 12
 - Future GeneSTAR products will evolve in a different fashion, more markers, more frequently
- 

STAR System



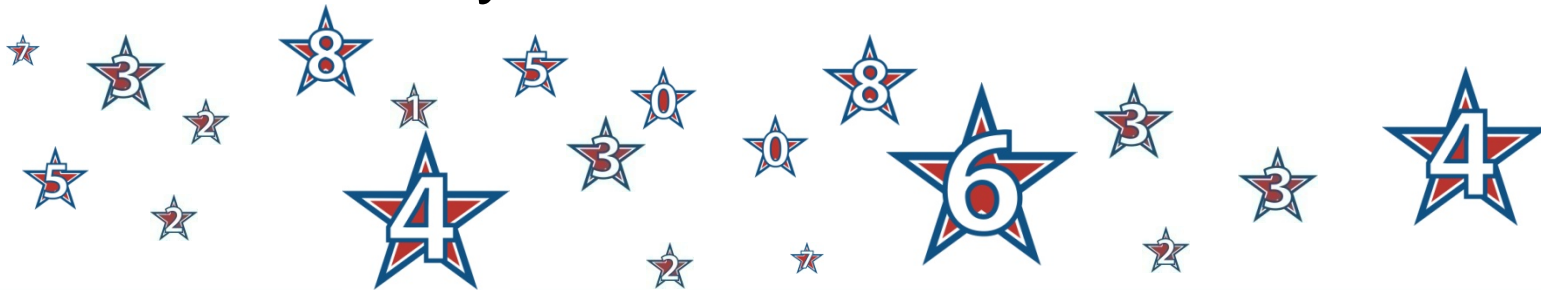
- Previous system displayed results as STARS
- 1 STAR per copy of favorable allele per trait
- 4 markers per trait, 8 STARS per trait possible
- Effective system conveying value to the customer
- Based on markers having equal & additive effects and only influencing a single trait.



More Markers



- Ongoing R&D has identified an additional 44 markers for use in GeneSTAR (56 marker panel)
- Under the STAR system this would result in a possible 112 STAR scale! (and will only grow)
- Not all markers have the same size of effect
- New markers affect more than 1 trait simultaneously



Solution



- Genetic merit reported instead of STAR count
- All markers contribute to a total molecular value prediction for each trait
- MVP approach conveys the true genetic value of an animal to the customer
- Reported in trait units + or – from zero
 - AUSMEAT Marble score
 - Shear Force in kg
 - Net Feed Intake in kg/kg gain

Stars to MVPs



12 individual markers	56-marker panel
Number of stars	Genetic merit of animal
Number of favourable alleles	Collective effects of all markers into a trait prediction
Equal effects of each marker	Accounts for individual marker effects
Accuracy not applicable	Accuracy value provided
Genetic variation range 12 – 30%	Genetic variation range 20 – 50%
Breed benchmarks not provided	Breed average and percentile rank reported
Validation Different in Markets	Validation Across All Markets / Traits

MVP Advantages

- Quantifies animal's ability to perform
- Measured in relevant units of trait
- Accounts for relative size of marker effects
- Accuracy of MVP provided
- Compatible with EBV
- Benchmarks against breed contemporaries
- Applicable to multi-trait selection



MVPs – Reporting Format



- MVP expressed on a +/- scale from 0, where 0 = average of all animals evaluated
- Accuracy based on individual genotype and size of marker effect
- Breed average and individual animal percentile ranks allow bench-marking

Molecular Value Prediction			
	Quality		Production
	Marb	Tend	FE
MVP	0.13	0.11	1.08
Acc	0.23	0.41	0.35
% Rank	40%	80%	100%

MVPs – Summary statistics eg

GENESTAR CUSTOMER JOB RESULTS FINAL REPORT

Job Number:

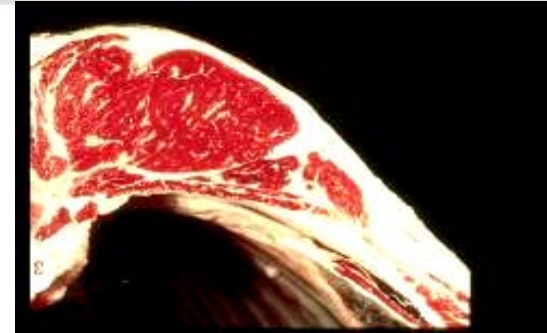
Customer name:

Customer address:

Molecular Value Prediction

		Quality		Production	
		Marb	Tend	FE	
Breed: Angus	Breed Trait Statistics:	Average	0.17	-0.17	0.48
		Min	-0.30	-0.92	-0.84
		Max	0.52	0.57	1.29
	Herd Trait Statistics:	Average	0.07	-0.25	0.46
		Min	-0.13	-0.92	-0.29
		Max	0.35	0.34	1.11
Herd Distribution of Animals Relative to Breed Quartiles:	Top 25% (1-25 quartile)	20%	10%	10%	
	26-50 % (quartile)	40%	20%	20%	
	51-75 % (quartile)	30%	40%	30%	
	Bottom 25% (76-100 quartile)	10%	30%	40%	

What traits are we working on?



- Feed efficiency
- Feedlot health index
- Post weaning gain growth
- Temperament index
- Days to spec
- Immunological factors
- Ribeye area
- Carcass weight
- % Red meat yield
- Marbling/IMF
- Tenderness
- Fatty acid profile
- Healthfulness of beef

What traits are we working on?



- Heifer fertility
- Cow maintenance efficiency
- Longevity/Productivity
- Calving ease
- Bull fertility / libido
- Cow profitability index



Watch this space...



- Please provide feedback on what you have heard today
- Contact us directly with any questions big or small
- Help us to shape our future products to suit your operation

Thank You



Pfizer Animal Health
Animal Genetics

GeneSTAR[®]