



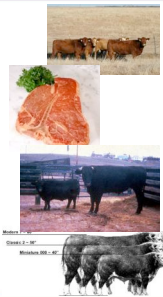
Pfizer Animal Health
Animal Genetics

Whole Genome Selection

Mark Allan, PhD

Traditional Selection Works Well




- Visual
- Performance Data ***
- EPDs**** AI use
- Pedigree
- GeneSTAR MVP
- Whole Genome Selection
- Economic Indexes

Production										Maternal				
CE	BW	WW	YW	YH	SC	CEM	Mk	Mk	MH	SE	IMD	MV	MH	SEN
Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc
+11	+1.0	+43	+42	-5	-76	+2	+13	2	+13	2				+10.31
65	85	85	78	53	66	22	48	3						

Carcass					Udder				
Cut	MB	RE	Fat	Op	%MF	RE	Fat	Op	Prng
Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc
+1	+29	+29	-109	1	-15	+39	+0.18	34	
10	11	10	09	1	76	75	75	117	


Values					
SE	SE	SE	SE	SE	SE
+27.96	+22.58	+4.25	+3.93	+2.12	+20.07

Pfizer Animal Health
Animal Genetics




MVPs for Whole-Genome Selection

- Using a large panel of markers (>50,000 markers) to estimate genetic merit as an MVP.
- Covers the whole genome with a single analysis.
- Expected to be higher accuracy than current technologies.
- Can be applied for wide variety of traits.

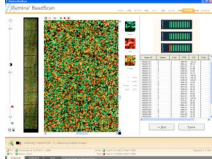


Pfizer Animal Health
Animal Genetics




WGS at Pfizer Animal Genetics

- WGS is important for the industry
- We are developing a WGS product
- Using a robust system with novel approaches
 - Different methodologies along with checks and balances
- Commercially ready when:
 - We are confident in the offering
 - The product aligns with customer needs and expectations

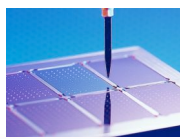


Pfizer Animal Health
Animal Genetics




WGS at Pfizer Animal Genetics



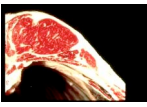
- Analytical approach that will:
 - Make genomic information usable today and the future
 - End goal is to have a genomics-based resource that assists producers in their decision-making.
- We will do this by:
 - Best in class analytical methodology
 - Develop across a broad range of traits
 - Continually investing in technology, data generation and human resources



Pfizer Animal Health
Animal Genetics




What Postweaning Traits?

- Feed Efficiency
- Postweaning Gain
- Growth Curve Parameters
- Temperament Index
- Days to Spec
- Feedlot Health Index
- Immunocompetence Index
- Ribeye Area
- Carcass Weight
- % Red Meat Yield
- Marbling/IMF
- Tenderness
- Fatty Acid Index
- Healthfulness Index

Pfizer Animal Health
Animal Genetics



What Cow Herd Traits?



- Heifer Fertility
- Cow Maintenance Efficiency
- Stayability (Survivability)
- "Fleshing Ability"
- Calving Ease
- Bull Fertility / Libido
- *Cow Herd Profitability Index*

Pfizer Animal Health

GeneSTAR

Pfizer's Commitment

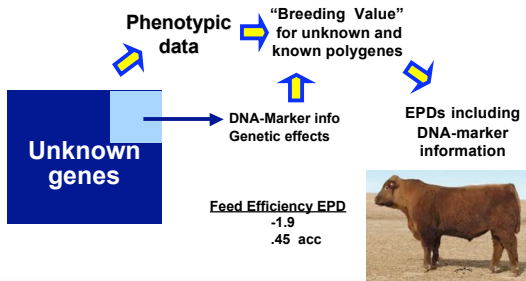


20,000
X
50,000 (or more)
X
\$\$

Pfizer Animal Health

GeneSTAR

Where we are Going



Pfizer Animal Health

GeneSTAR