



GeneSTAR

An important new tool for
beef producers in South
Africa.

SAFA Conference: Indaba Hotel

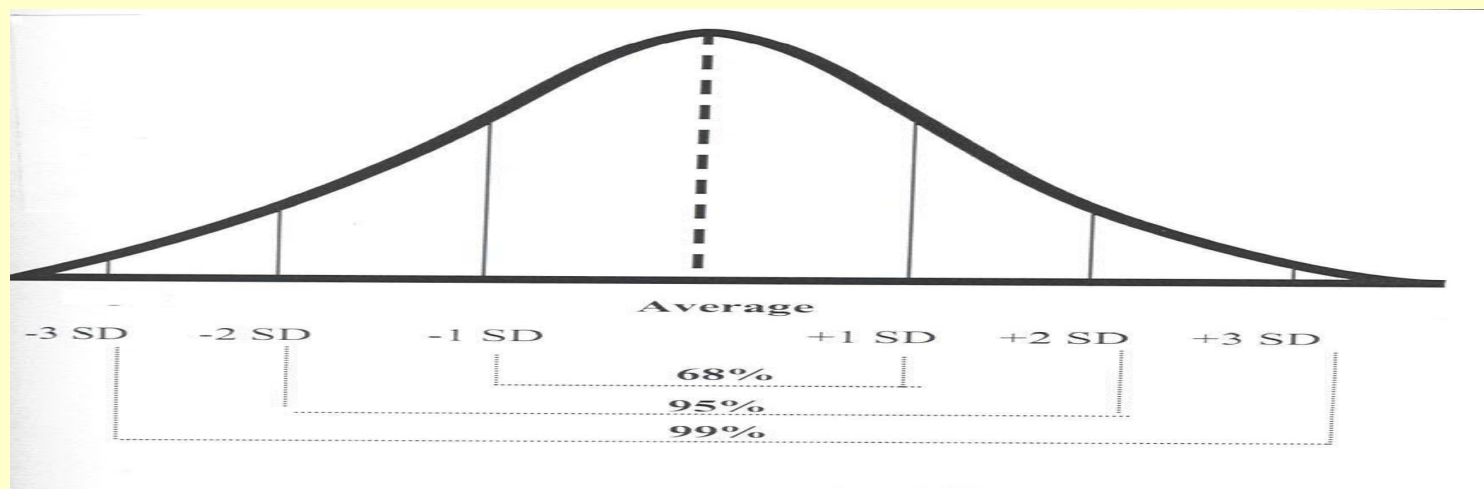
Beef is good for you: March 2003

Dr Michael Bradfield

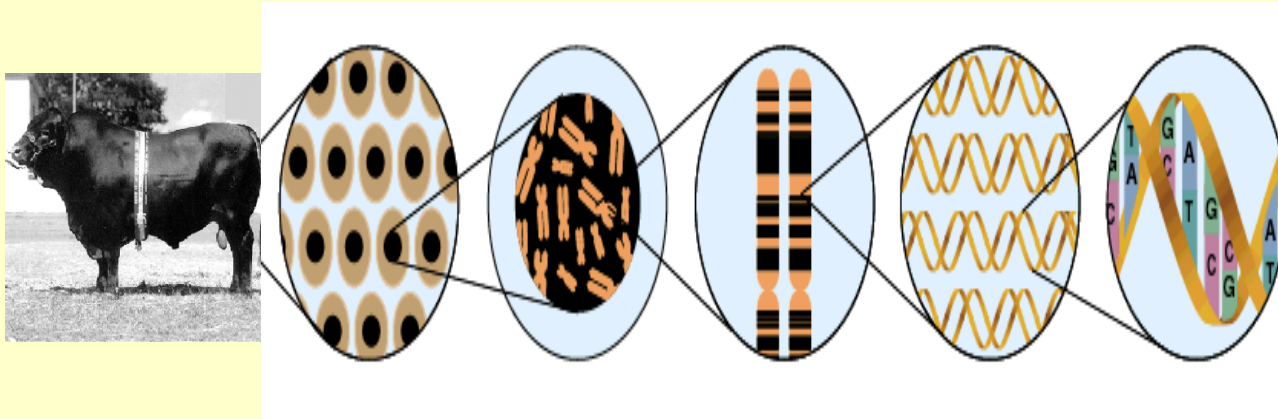


The Old

- Selection of superior animals with performance recording



Combining the old with the New



DNA Markers:

- Traits that are difficult to measure
 - Meat Quality
 - Feed Efficiency
 - Novel Traits
 - Compliment progeny testing (dairy)

GeneSTAR Marbling and Tenderness

- Aus Beef CRC Experiment
 - Funding of \$70M over 7 year periods
 - **First commercial Genetic Marker test for commercial trait**
- Focus on Meat Quality



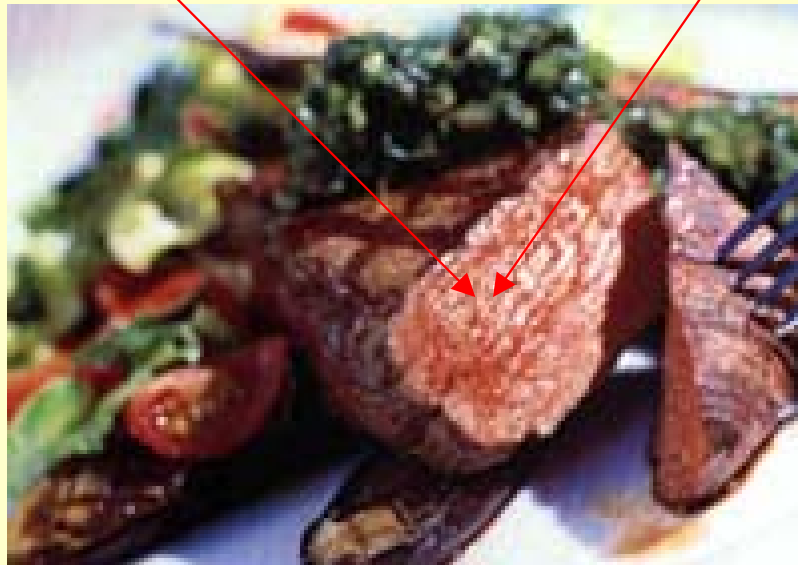
Beef Consumption

- USA and Australia have increased consumption over the past 3–4 years
- Better marketing and Guaranteeing a better eating experience

Eating experience

Juiciness and
Flavor

Tenderness



I khou difha

Its very nice

Dis baie lekker

- Marbling

Positively associated with Juiciness and Flavour (Johnstone 2001)



- Tenderness

- Results in a more positive eating experience

Meat Quality can be improved by:

- Genetics

- Identifying bulls whose progeny produce more tender meat

- Environment

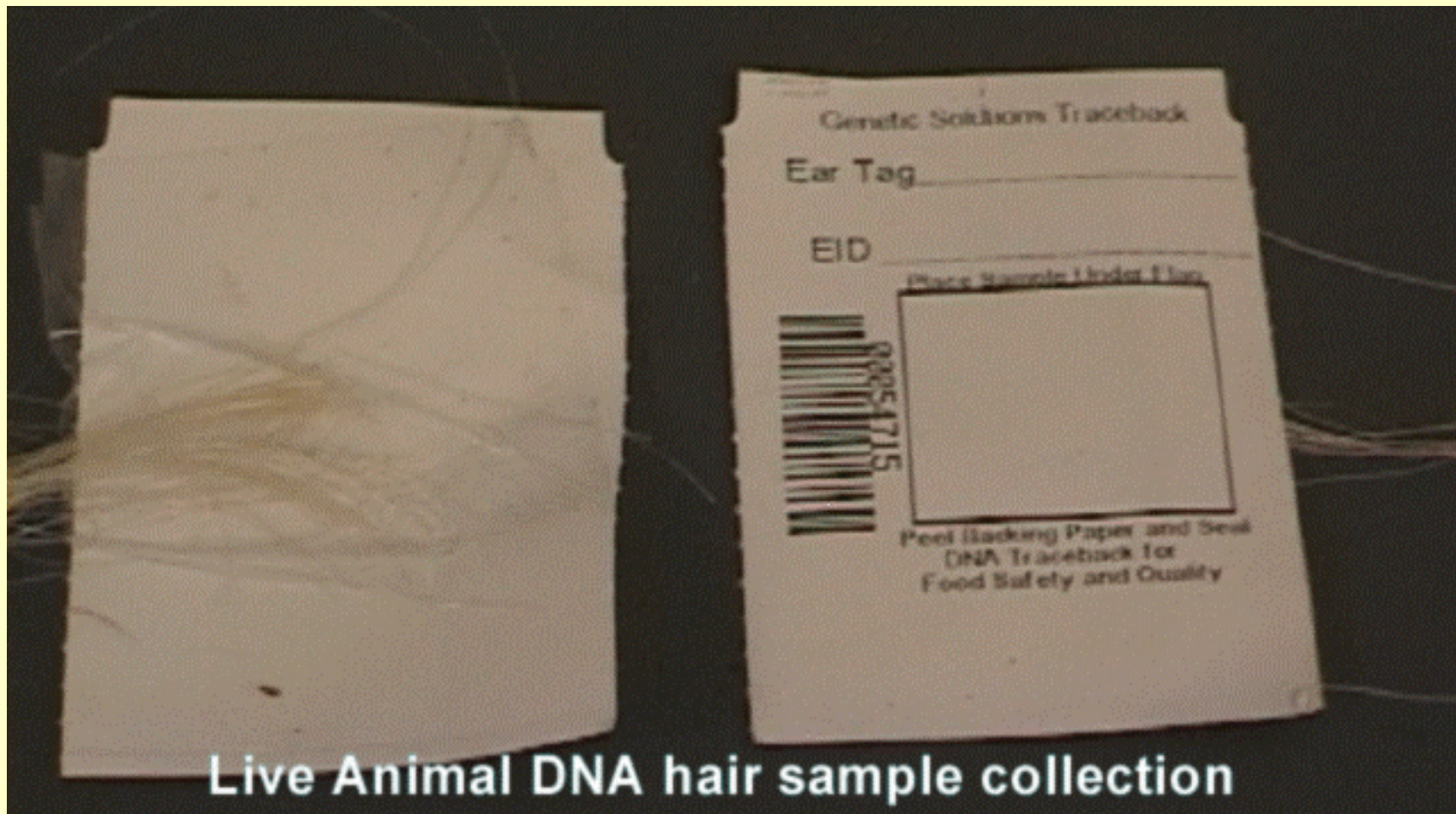
- Electrical stimulation
- Ageing
- Grain vs grass

Genetic Marker for Marbling and Tenderness released in 2002

Accurate DNA diagnostic



Simple sample collection



Live Animal DNA hair sample collection

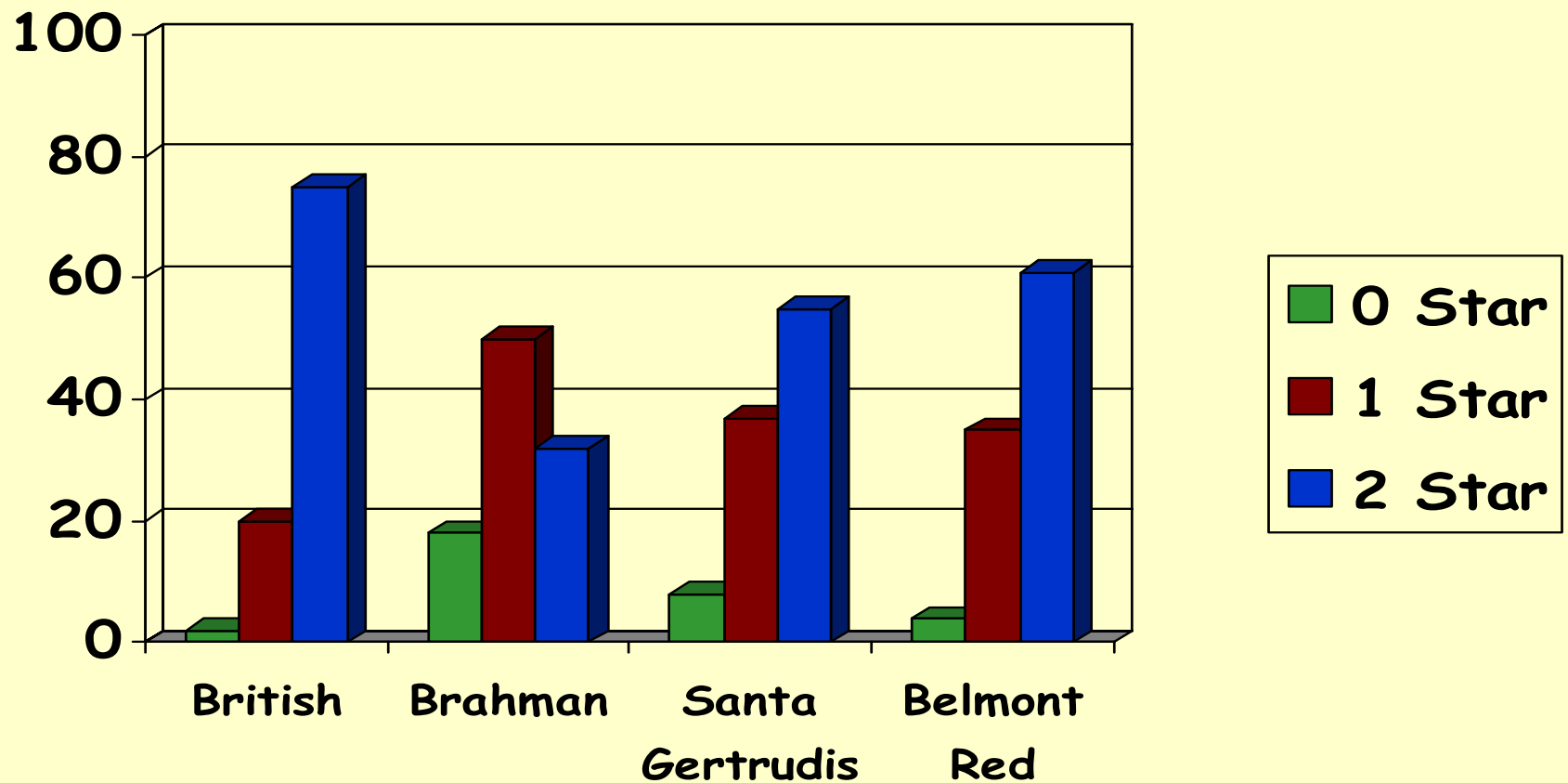
Results from CRC Experiments

- **Tenderness**

- **Frequency of Gene**
- **Size of effect**
- **Measured as Warner Bratzler**
- **Trials used 384 Sire Groups**

More than 5000 Straightbred Cattle

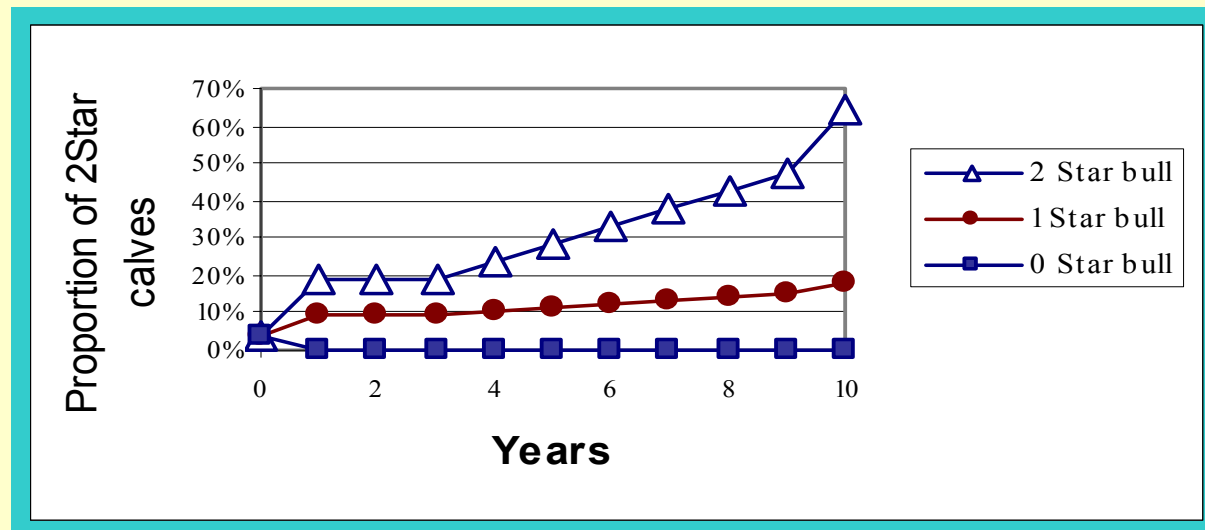
Frequency: Tenderness
























- Suggested Breeding Practice's

British: Eliminate 



Indicus: Identify 



Mating Patterns

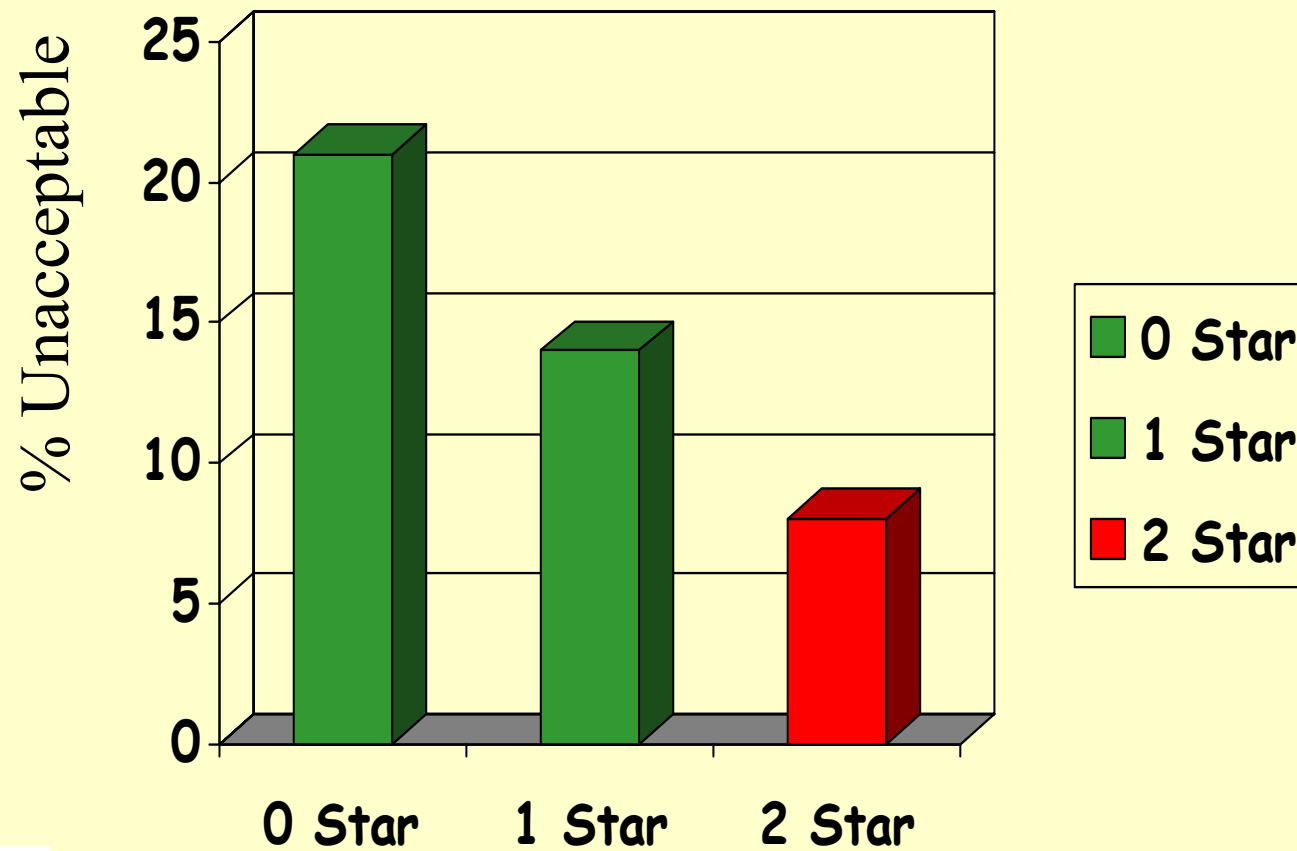
Sire	Dam	Dam	Dam
			
	All progeny 	50% 50%  	All progeny 
	50% 50%  	25% 50% 25%   	50% 50%  
	All progeny 	50% 50%  	All progeny 

Size of effect

- Differences in shear force was 0.37kg between  and  (British)
- 0.44 for Brahman data set
 - Is 8% and 9% of the mean respectively
 - After adjusting for processing effects difference between 0 and 2 star was

10%

Relationship between Consumer acceptance and 0,1 and 2 star animals



Points to note:

The difference in tenderness is
predicted to more than halve
number of tough carcasses (USDA)
(23% – 8%)

Point to Note




- Difference in 2 star and 0 star is greater than difference between grain and grass fed

Application

- Initially selection in Seedstock sector
- Testing in feedlot sector will follow at a later stage

Marbling


- Frequency (> 100 samples):

	Black Wagyu	Red Angus	Black Angus	Other
	38%	21%	11%	8%
	50%	51%	45%	39%
	12%	28%	44%	49%

- Size of effect:

- 2 trials: USA and Aus Beef CRC

- Between 10-12%

-  = 16% more choice grade in USA
beef system

Conclusion

- No correlation between GeneSTAR and other carcass traits
- GeneSTAR Tenderness test will officially be launched in RSA on 11 April 2003
- Cost will be between R360–400
 - Seedstock producers advised to test herd Sires
- Tests for feedlot sector will follow



Thank You

