



# GENETIC JEOPARDY

FINAL  
JEOPARDY



GROUP 1

10

20

30

40

50

GROUP 2

10

20

30

40

50



## GROUP -1 for 10



**These are used to compare  
the predicted differences  
between bulls' calves  
performance when mated  
to the same cows**



GROUP -1 for 10

# What are expected progeny differences (EPDs) ?

An EPD is an estimate of the genetic value that will be passed onto the progeny of that animal





## GROUP -1 for 20

**An animal that inherited  
identical copies of a  
gene from each parent  
is said to be this.**



GROUP -1 for 20



# What is homozygous ?

All the progeny from a homozygous animal (e.g. two star or “\*\*”) will inherit one copy of that genetic variant from that parent.





## GROUP -1 for 30

It is the process of using the results of DNA testing to assist in the selection of individuals to become parents in the next generation



## GROUP -1 for 30

# What is marker-assisted selection ?

The genotypic information provided by DNA testing should help to improve the accuracy of selection, and increase the rate of genetic progress by identifying animals carrying desirable genetic variants for a given trait at an earlier age.





**GROUP -1 for 40**

**Currently there are two  
DNA-based tests on the  
market for this trait.**



GROUP -1 for 40

**What is marbling or**

**What is tenderness ?**

MARBLING

GeneSTAR Marbling

Igenity-L

DESIRED GENOTYPE

\*\*

TT

TENDERNESS

GeneSTAR Tenderness

*Tender*GENE

\*\*

SNP 316 CC

SNP 530 GG





## GROUP -1 for 50

**If this source of information is available, it should also be considered when making selection decisions using DNA-marker information.**



GROUP -1 for 50



# What are EPDs ?

**When making selection decisions EPDs should be considered, even in the presence of marker data, as they estimate the breeding value of all the “unmarked” genes that contribute to a given trait.**





## GROUP-2 for 10

**It is a linear molecule  
that is shaped like a  
double helix and it is  
made up of pairs of  
nucleotides**



## GROUP-2 for 10

# What is DNA ?





## GROUP-2 for 20

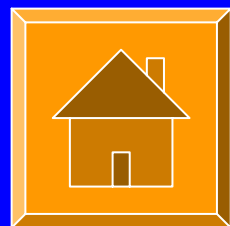
**An animal that inherited only one copy of a favorable genetic variant from its parents is said to be this.**



## GROUP-2 for 20

# What is heterozygous ?

**A heterozygous sire will only pass on the favorable genetic variant to half of his progeny**





## GROUP-2 for 30

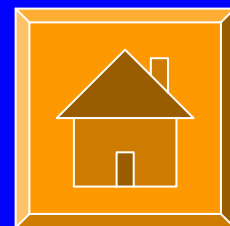
**This term is used to describe the genetic makeup of an animal**



## GROUP-2 for 30

# What is genotype?

**Animals are “genotyped” in the laboratory to determine the sequence of nucleotides in the DNA, usually at one particular gene or piece of a gene.**





## GROUP-2 for 40

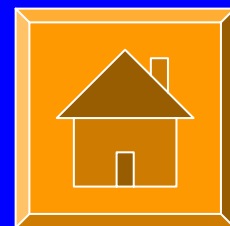
**This is the trait that is  
least-likely to benefit  
from marker-assisted  
selection.**



## GROUP-2 for 40

# What is growth performance ?

**Traits that have high heritability, are easy to measure, and already have good EPDs available are least likely to benefit from marker-assisted selection.**





## GROUP-2 for 50

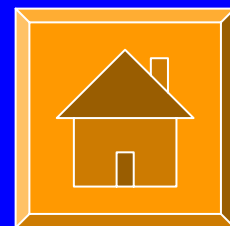
**How many genes does  
a DNA test give us  
information on ?**



## GROUP-2 for 50

# What is one ?

Complex traits, including most of the economically relevant traits for cattle production (birth weight, weaning weight, growth, reproduction, milk production, carcass quality) are controlled by many genes.





# FINAL JEOPARDY TOPIC

# Genetic Selection



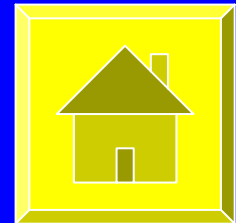
# FINAL JEOPARDY

**If it is too much work to use EPDs and genetic markers to make selection decisions, this is the place you can buy a bull?**



# FINAL JEOPARDY

What is the auction yard ?





# Bulls to choose from...

