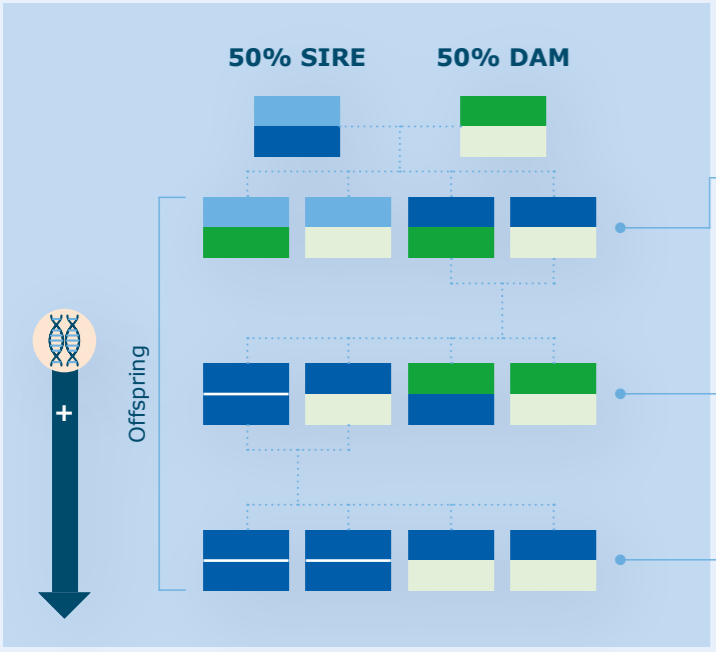
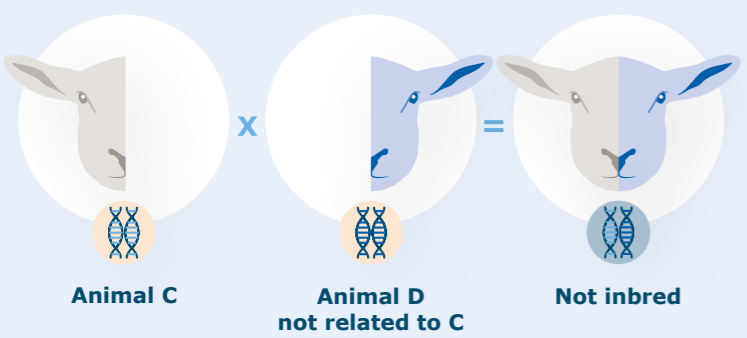
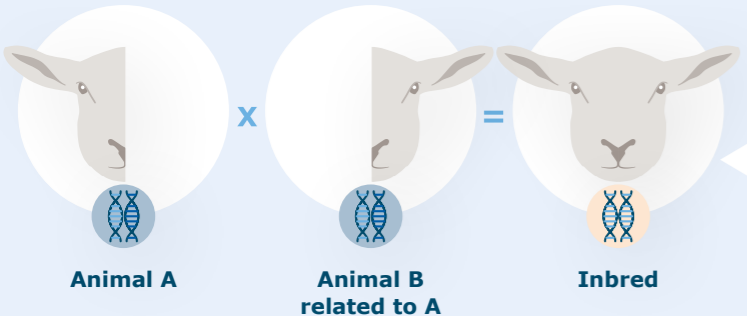
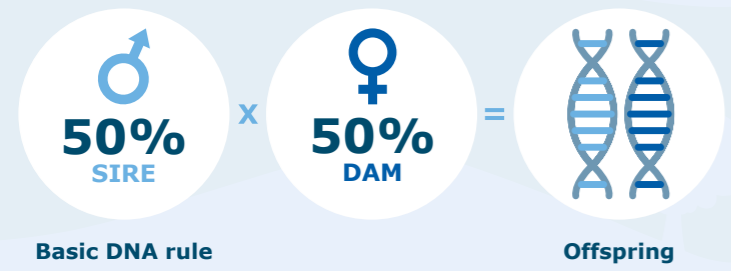


What is inbreeding and why is it a problem?

WHAT IS INBREEDING?



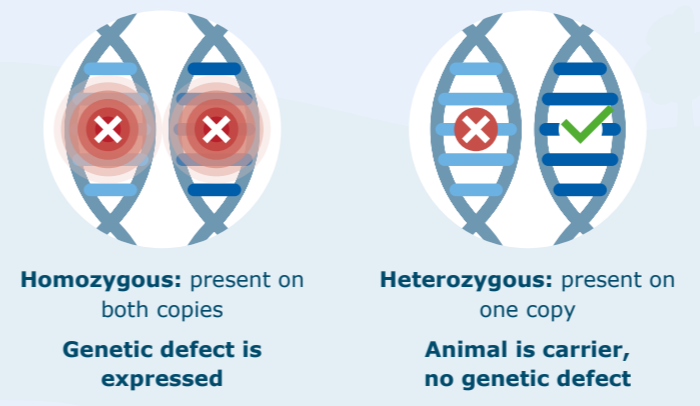
No inbreeding
For each gene, different combinations of the DNA of the sire and the dam are possible.

Inbreeding
Variation in gene combinations decreases. Animals are homozygous if they have twice the same gene. (■).

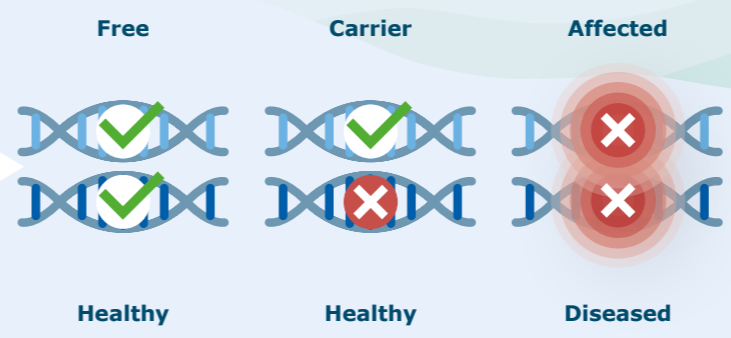
Inbreeding
Causes reduced variation and increased homozygosity in future generations.

RECESSIVE GENES AND GENETIC DEFECTS

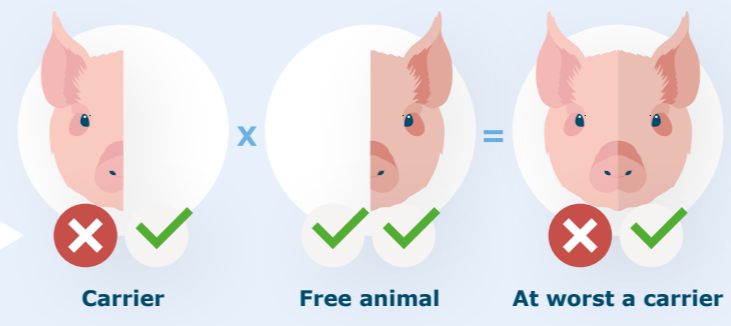
Recessive genetic defect (one f)
There are many genetic defects. Every animal (including humans) unknowingly carries different (lethal) defects. Only with two copies of the same (lethal) gene, the defect will be expressed.



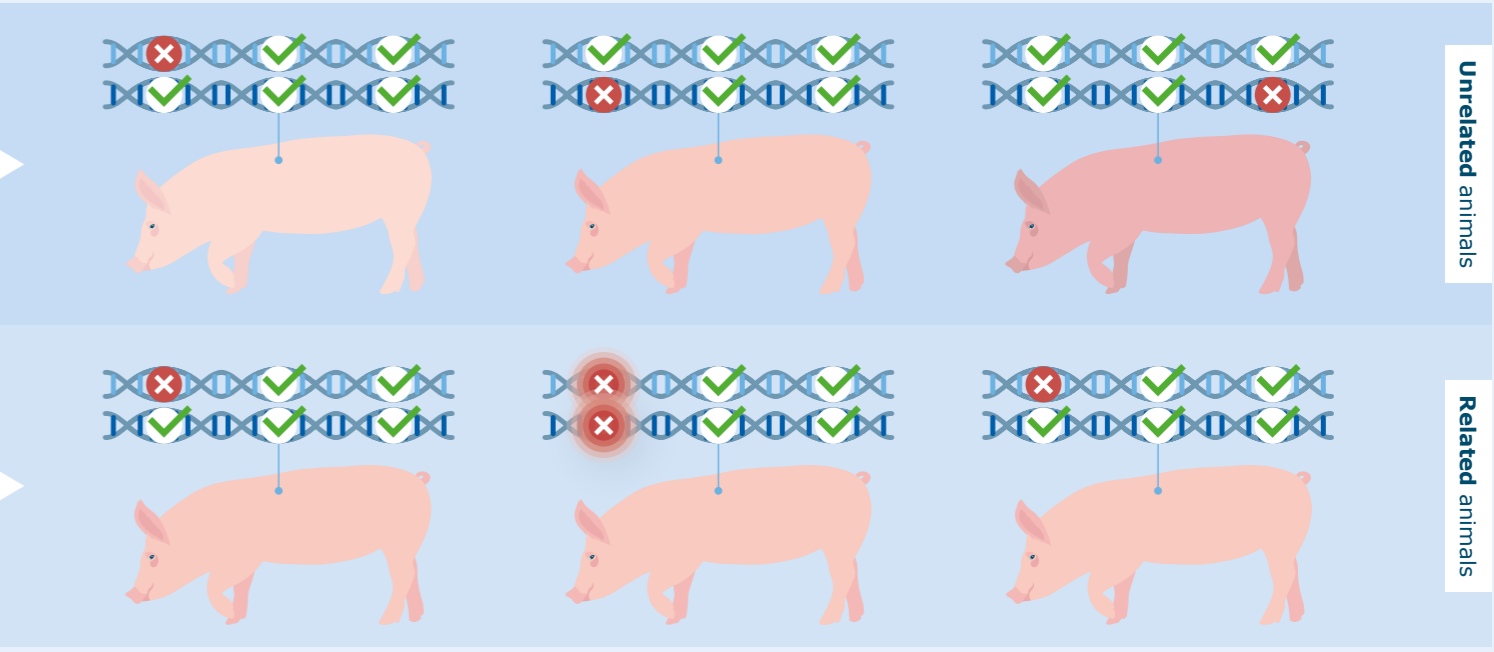
Free, carrier and affected
Genetic defects are rare and most animals are free (no copy) or carrier (one copy). With increased inbreeding higher frequency of affected animals (two copies of the same defect).



Matings between carriers and free animals
With a mating between a carrier and a free animal the offspring are, at worst, carriers.



Matings between carriers
Unrelated animals carry different genetic defects. Mating between unrelated animals will hardly ever result in two copies from both sire and dam of the same defect in their offspring. Affected animals are extremely rare. **Related animals** are more likely to carry the same defect. Their offspring can inherit the same defect from both sire and dam, consequently the defect will be expressed.



INBREEDING DEPRESSION GENETIC DEFECTS

- Decreased vitality** **Serious consequences**
- Lower fertility
 - Less resistance
 - Less growth
 - Lower milk yield
 - Shorter lifespan
 - Skeletal deformities
 - Metabolic diseases
 - Immune system diseases
 - Epilepsy
 - Blindness

