# Elimination
# of
# Genetic Defects

## Internal Seminar

## 8 November 2011

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# Things to discuss

- Genetic defects in dairy cattle

- Handling genetic defects in the breeding schemes

- Elimination



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# Genetic defects in the dairy breeds

- Holstein
  - CVM
  - BLAD
  - BY
  - (HH1, HH2, HH3)
- VikingRed
  - Shrimp gene (not lethal)
  - Spinal Muscular Antrophy (Liggekalv) - Brown Swiss
  - Spinal Dysmyelination (Medfødt lammelse) - Brown Swiss
  - (BH1) Brown Swiss
- Jersey
  - (JH1)

# Types of defects

- Lethal versus "not lethal" defects
  - Most attention on lethal defects as they have both economic and ethical perspectives

- Lethal defects can also be divided into defects where:
  - A defective calf is born after normal pregnancy
  - The defective homozygotes will be aborted in early embryo stage

# Handling in practice

- In Sweden we are not allowed to use carriers of lethal genetic defects


- In Denmark and Finland we have a controlled use of high-ranking carriers
  - Mainly to produce non-carrier sons for next generation
  - Try to avoid combination of carriers in mating
    - Have good tools in the mating programs
    - But not 100% safe as the defective gene can originate from ancestors far behind in the pedigree

# Genetic defects in the breeding schemes

- All VikingGenetics bulls are tested for known genetic defects
  - Still not the recently detected haplotypes (HH1, HH2, HH3, BH1, JH1)

- VikingGenetics does not purchase any new carrier bulls of the known lethal defects

# Elimination

- All known lethal defects will be eliminated over time
  - As no additional carriers are being purchased
  - The elimination will be most efficient in Sweden as no carriers are being used

- Future elimination strategy to discussion when we have more details regarding frequency of lethal genetic defects in the breeds

- More investigations regarding economic value of each defect
  - The financial consequences of short term elimination can be dramatic due to decreased genetic gain