

SNP parentage testing experiences from KWPN

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KWPN Royal Dutch Sport Horse

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#### History KWPN parentage testing

Before 2018 (all STR testing)

- Mandatory sire and dam testing for;
  - Approved stallions
  - Foals not identified and microchipped in presence of their biological dam (e.g. ET / ICSI foals, weaned foals etc.)
  - Horses with special issues
    - (e.g. late registrations, wrong color matches, 2 covering dates within
    - one heat with 2 different stallions etc.)
  - Samples of studbook mares during gradings
- Voluntary testing;
  - Breeders initiative



### History KWPN parentage testing



Since 2018;

- Mandatory parentage testing for all new registered horses
  - Sire only
    - For horses identified and microchipped in presence of their biological dam
  - Sire and Dam
    - All other situations (including ET / ICSI foals)
- Voluntary testing;
  - Breeders initiative

### From STR to SNP testing $\rightarrow$ Why?



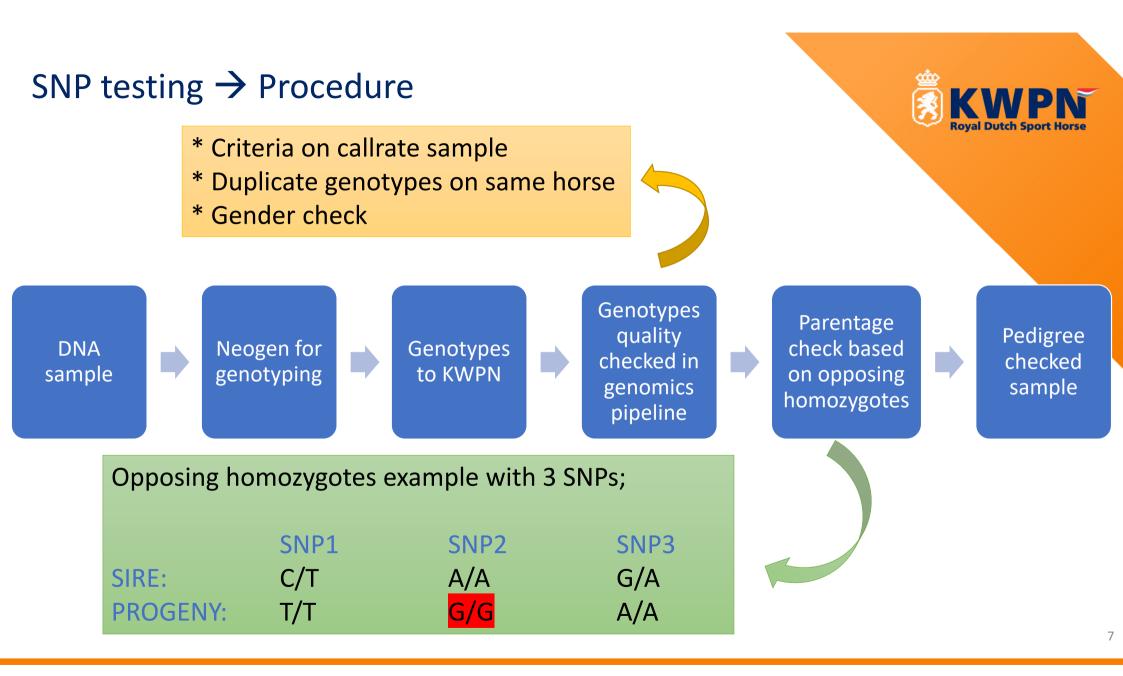
Since 2016;

- KWPN has introduced genomic selection in their breeding program
- A lot of horses were SNP genotyped for this occasion
- Members didn't understand why parentage check and genomic selection are two different types of analysis (STR vs SNP)
- Looking for a method were we could serve both ways with one technique and one analysis only.
- Logical step to make the move to SNP already

From STR to SNP testing  $\rightarrow$  How?

- Together with our lab Neogen/ Geneseek in Scotland we developed a SNP warmblood panel
- Warmblood parentage panel consists of;
  - Known SNPs of ISAG core panel, but also present at Geneseek's high density SNP chip (GGP) (at that time)
  - Supplemented with carefully selected SNP's suited for parentage check, also available at high density chip; to gain more power of exclusion
- But....time flies and development also! → nowadays;
  - The GGP equine chip has been developed further and comprises all ISAG SNPs which are under investigation.
  - KWPN genotypes all foals and horses on this high density chip and extracts from this the needed (international) core panel for pedigree testing

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#### KWPN Royal Dutch Sport Horse

## SNP testing $\rightarrow$ Pros and cons vs STR

- Pros
- SNP is technique of future
- Fast and accurate
  - No 'subjective' reading of scores
  - Computer algorithms can do the job
  - In case of pedigree failure  $\rightarrow$  easy search for 'possible parents'
- High density results also useable, double genotyping not necessary
- Costs are similar to STR testing, but of course dependent on quantity
- Cons
- Not all sire and dams have SNP genotypes (sometimes difficult to get DNA as well)
- Need expertise to do actual parentage check if your lab is only genotyping, but almost all labs have this service.
- ISAG SNP panel not clear yet → needed for international exchange of SNP genotypes (including guidelines how to deal with them)

# Thank you for your attention!





