SoGen: a project for breeders

Margot Sabbagh – March 2018

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Project's objectives

SOGEN: Genomics of the jumping horse (4-5 years old)

Breeders' request for early estimation of the sporting potential of their young horses

Working group: IFCE, INRA, SHF, SF, ANAA, and other sport breeds

3 actions:

1. Analyse 1,000 horses in 3D Morpho
2. Analyse 1,000 horses in accelerometry
3. Genotype 2,000 horses

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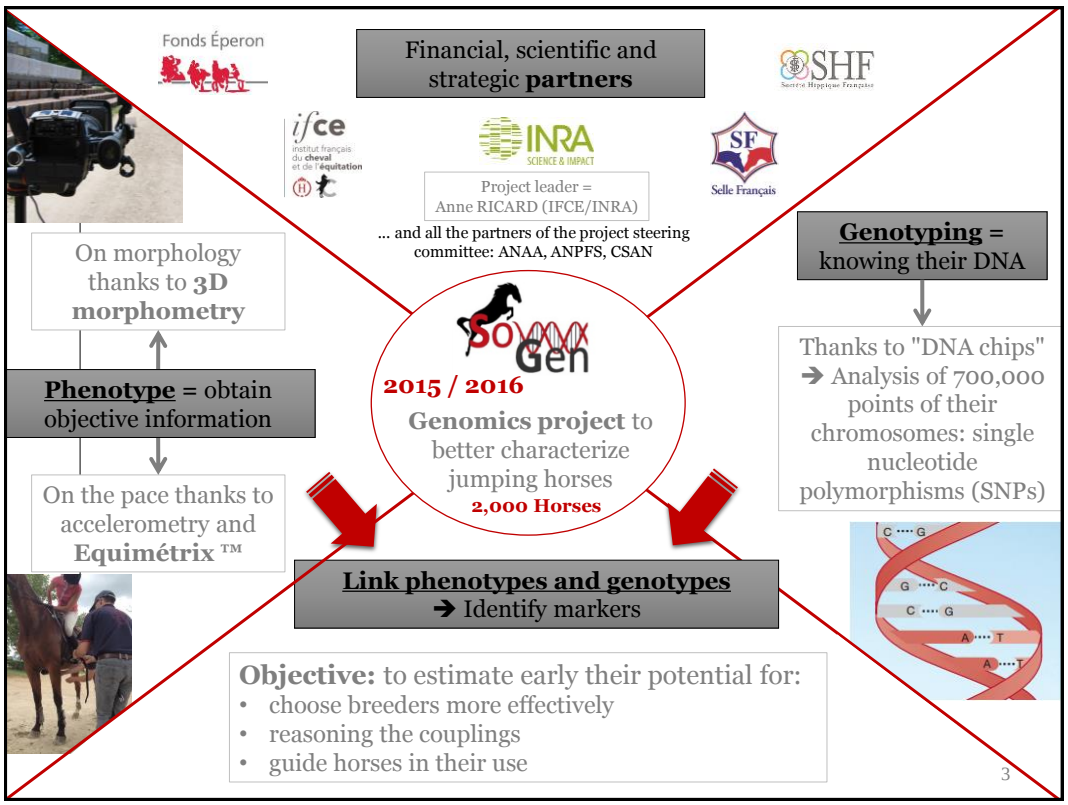

Project's objectives

2 years of data collection on volunteers

Only competitions reserved for young horses

At least 50 horses / age class / competition ➔ able to estimate competition effect

Will: not to slow down the pace of the tests (30 horses per hour)

The IFCE agents were in charge of collecting the data

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3 dimensional morphology (3D Morpho)

Technique developed by N. Crevier Denoix

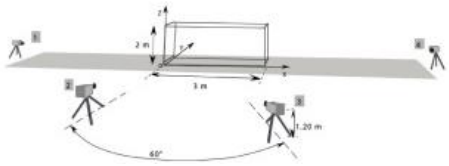
4 cameras to have a 3-dimensional image

Horse without saddle and without protection on the limbs or cap

2 go back to step between cameras per horse ➔ **very quick around 2 min**

Need 5 people (ifce):

- Horse identification
- Remove the saddle
- Glue some stickers
- Recording of data
- Passage of the horse in the cameras



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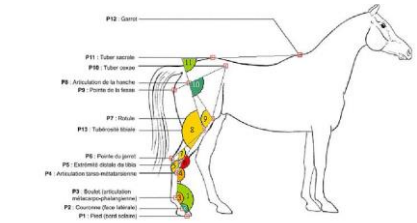
3 dimensional morphology (3D Morpho)

Long stripping: 45 minutes per horse (1 person (ifce))

400 morphological parameters (angles, length) from 28 landmarks

Each marker is positioned in 3 dimensions



Exemples de mesures réalisées au cours d'étude
Représentation des angles articulaires calculés en 3-D à partir des IR-Post sur une vue de profil, 1ère partie
(Dessin J-M. Denoix), Source DOUCET M. 2007

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Accelerometry using EQUIMETRIX ®

Technique developed by E. Barrey

5 diagonals in a square of 60 m by 20:

Working Trot, Medium Trot, Working Canter, Medium Canter and Walk

Stabilized horse for at least 10 seconds

Very quick around 2 min

Need 4 people (ifce):

- Horse identification
- Set up the accelerometer (2 people)
- Recording of data

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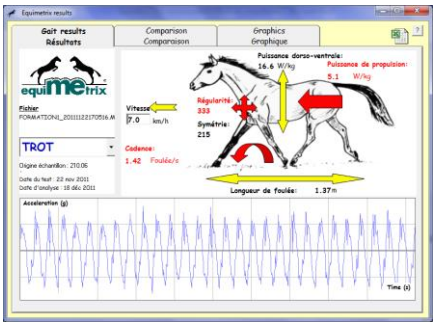
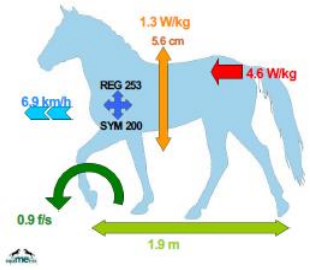
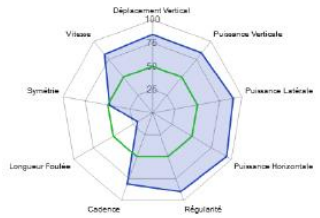
Accelerometry using EQUIMETRIX ®

Very short stripping: less than 5 minutes per horse (1 person (ifce))

9 dimensions for each pace







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DNA

Genotyping of 2000 horses characterized for gaits or morphology

Collection of DNA in the DNA library from blood samples taken during filiation checks

For the missing horses, DNA collection via hair extraction at the tail during the competitions

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Some new projects

- Project on Selle Français of 3 years old

➔Accelerometry during show

Analysis of free jumping : 5 dimensions

- SoGen: a database (fine characterization related to genotyping) for the emanation of new projects

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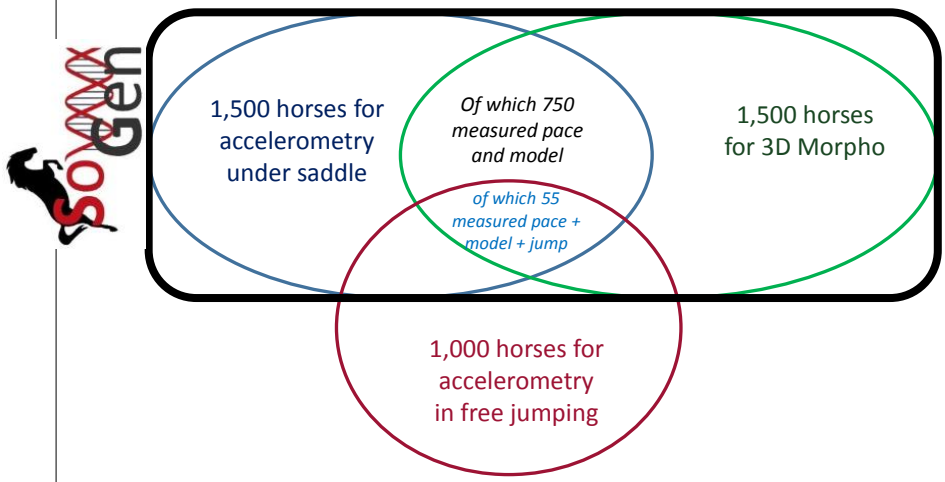
and in the end, how many horses?



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