



EAAP2018

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UNIVERSITY OF VETERINARY
MEDICINE · BUDAPEST



A population-scale phenotyping of Hungarian Grey bulls with the optometric VATEM method and the launch of the phenbank.eu

A. Beck, A. Gáspárdy., I. Bodó, L. Jávorka, M. Szemenyei,

Á. Maróti-Agóts

Introduction – Hungarian Grey breed

- improve productivity
- review the breeding goal

Aims:

- Hungarian Grey bulls phenotyping
- Launch **phenbank.eu** for publishing



Material – Hungarian Grey bulls

- Serious **bottle neck** after the WWII
- Only 6 bull were survive at Hortobágy
- Preservation works of breeders – Prof. Imre Bodó
- Today over 400 registrated, qualified breeding bull

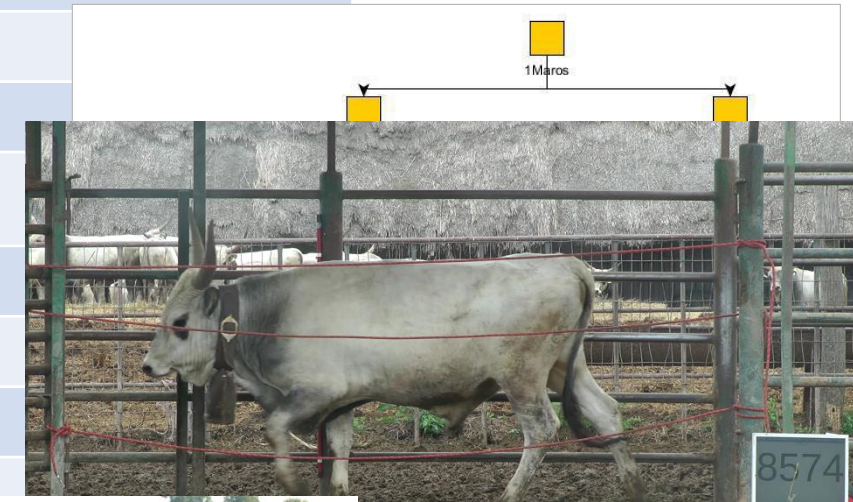
1945	
cow	~200
bull	~6



Material – measuring before qualifying

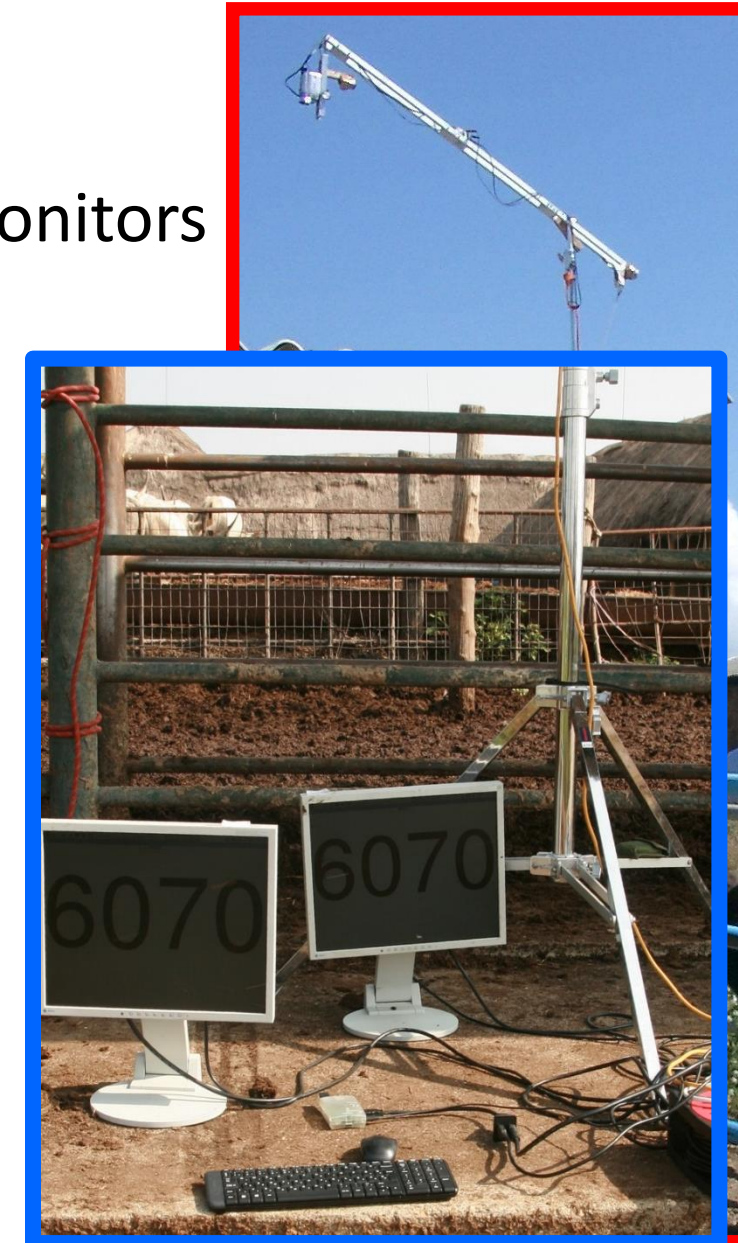
- Breedingbull lines in the breed
- Pedigree-, production data
- VATEM measuring for qualifying of two-year bulls (2014-) before sale
- Phenotyping of **breeding bulls**
 - Hortobágy (n=39)
 - Apaj (n=17)
 - Sarród (n=20)
- 2001 archive standard pictures
 - Hortobágy (n=17) breedingbull

Line	Founder bull	Place
B	Buckó	Kismarja
C	Betyár	
M	Maros	
T	Tuskó	
A	Árpád	
V	Vándor	
K	Kujon	
L	Lumbo	





- VATEM is an **optometric** animal measuring method
„stop the video record, not the animal!”
- Field stage – recording place, cameras: side, above, ID monitors

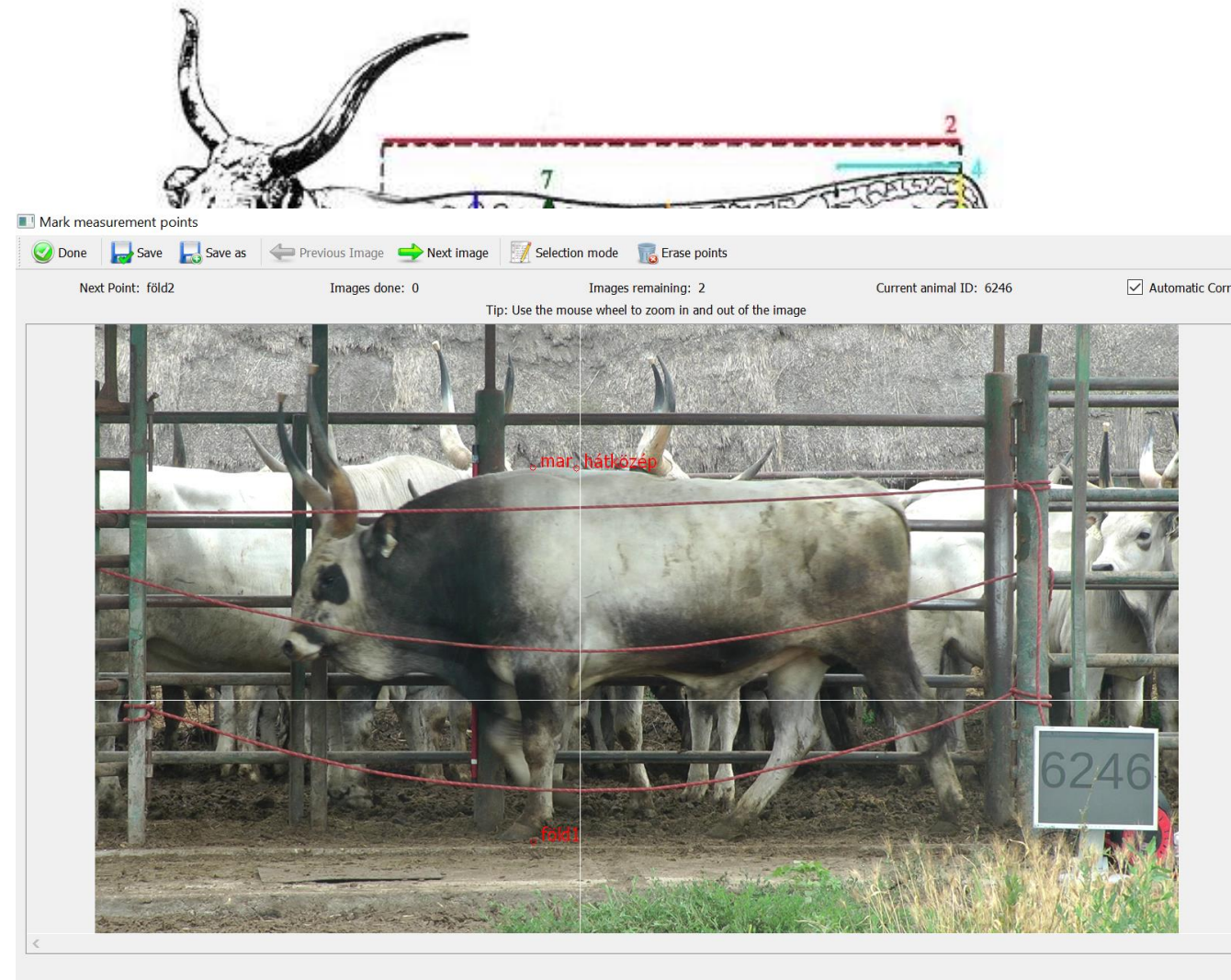


Method (VATEM)

VATEM2 softwear stage

VATEM2 Software – VATEM.HU

- Gait: step, without coverage of pen
- Standard position – standard frame
 - Vertical foreleg
 - Symmetrical back
- Measuring schemas
 - Lateral view
 - Top view
- Signing of necessary anatomical points
- Database in XLSX (MS Excel) format



- 1: width of the chest
- 2: ilium width of the rump
- 3: ischium width of the rump

Method – VATEM method




Method – VATEM method

Állóképek készítése

Kész Mentés Mentés másként Videók összekapcsolása Deinterlace Etalon Etalon méret (méter): 1,00

(1/1): E:/filmekVetemDoku/Bodó_anyagok/2018_VATEM/HB20 (1/1): E:/filmekVetemDoku/Bodó_anyagok/2018_VATEM/HB20 Elmentett képek



03:17 21:54 03:22 22:03

Volume control icon

Navigation icons: play, stop, previous, next, full screen, refresh

Method – VATEM method

Mark measurement points

Done Save Save as Previous Image Next image Selection mode Erase points

Next Point: föld2

Images done: 0

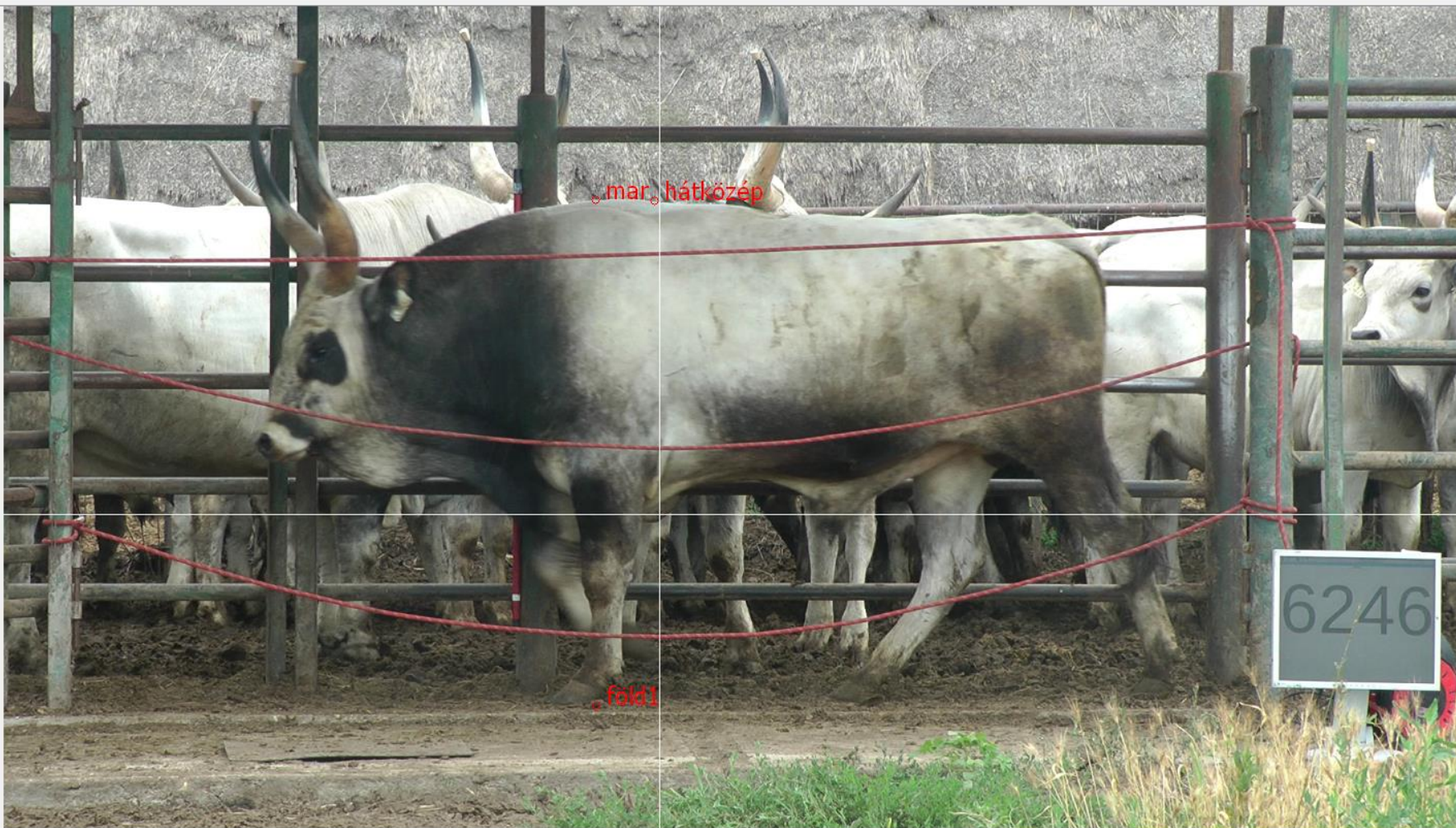
Images remaining: 2

Current animal ID: 6246

Automatic Correction Measurement Confidence (%) 100

Tip: Use the mouse wheel to zoom in and out of the image

Remaining Images



6246
6246

Results – VATEM measuring of HG bulls

Measurement	2017 - Hortobágy, Apaj, Sarród (n=76), cm(SD)
wither height	138(6.3)
height of back	136(6.8)
rump height	137(6.4)
trunk length	169(12.9)
body length	164(12.8)
chest depth	80(6.4)
shoulder width	52(5.4)
rump1	53(6.1),
rump3	24(2.3)
rump length	43(5.7)

Results – VATEM measuring of HG bulls

Measurement	2017 - Hortobágy, Apaj, Sarród (n=76), cm(SD)	2017(n=39) Hortobágy -cm(SD)	2001(n=18) Hortobágy -cm(SD)
wither height	138(6.3)	141(5.1)	140(3.9)
height of back	136(6.8)	138(5.1)	141(5.3)
rump3	24(2.3)	27(3.5)	26(2.8)
rump length	43(5.7)	46(2.4)	44(2)
ru		140(4.5)	144(4.1)
tru		171(11.3)	172(9.4)
bo		168(10.9)	165(9.2)
che		81(6)	82(3.8)
sho		54(4.4)	53(4.1)
ru		57(6.1)	49(3.3)



Phenbank.eu - Genbank ensembl.org



Pedigree data



VATEM2

Sample

Seqencing

Pedigree & Production data

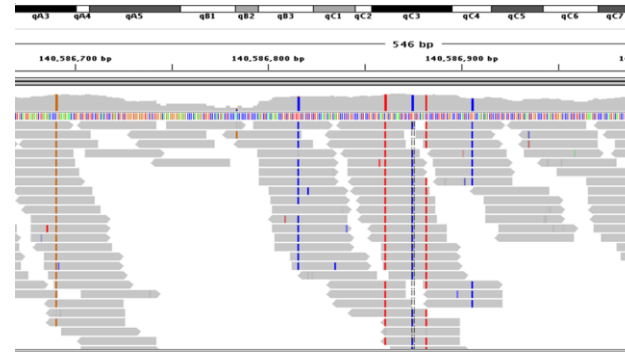
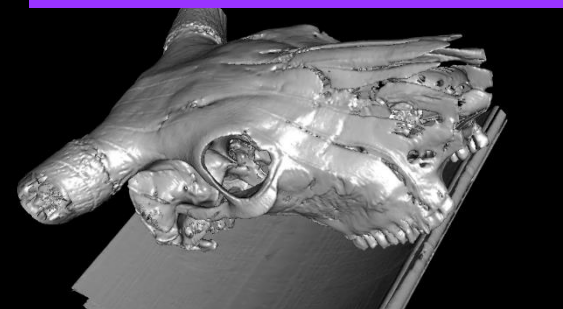
Microarray

„Phenotyping”

NGS

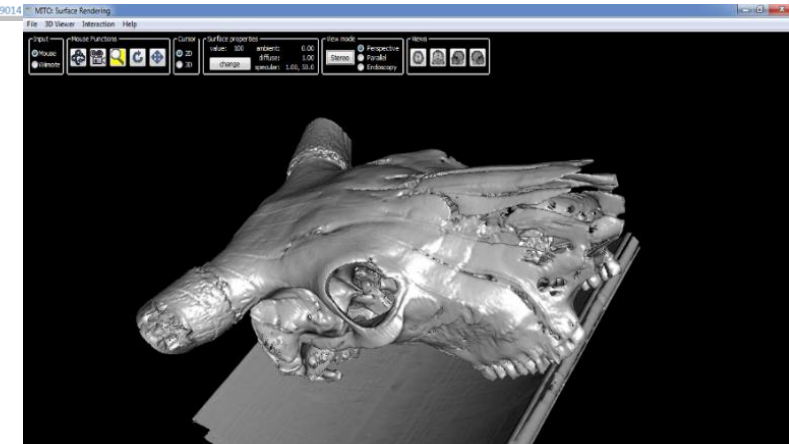
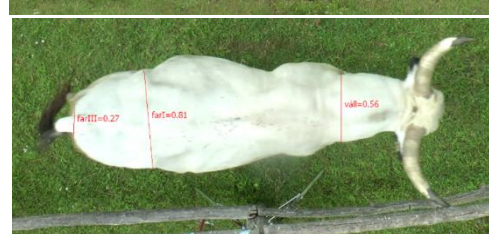
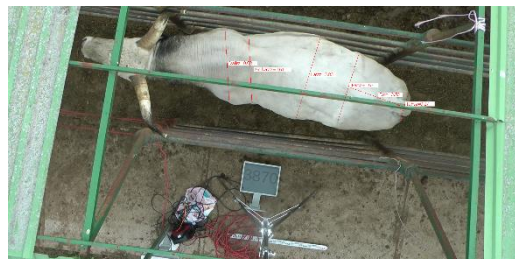
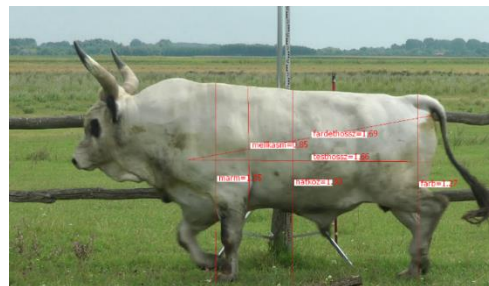
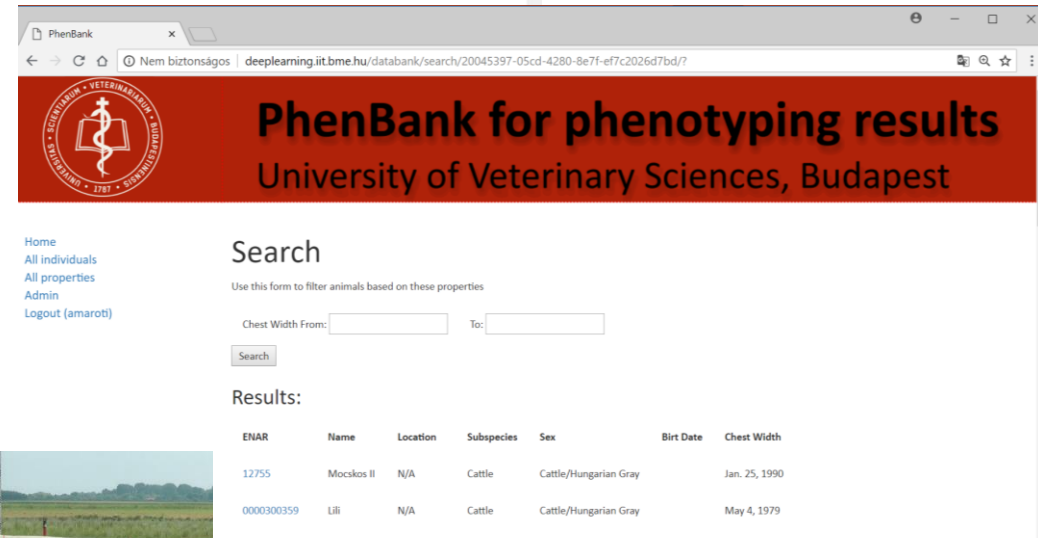
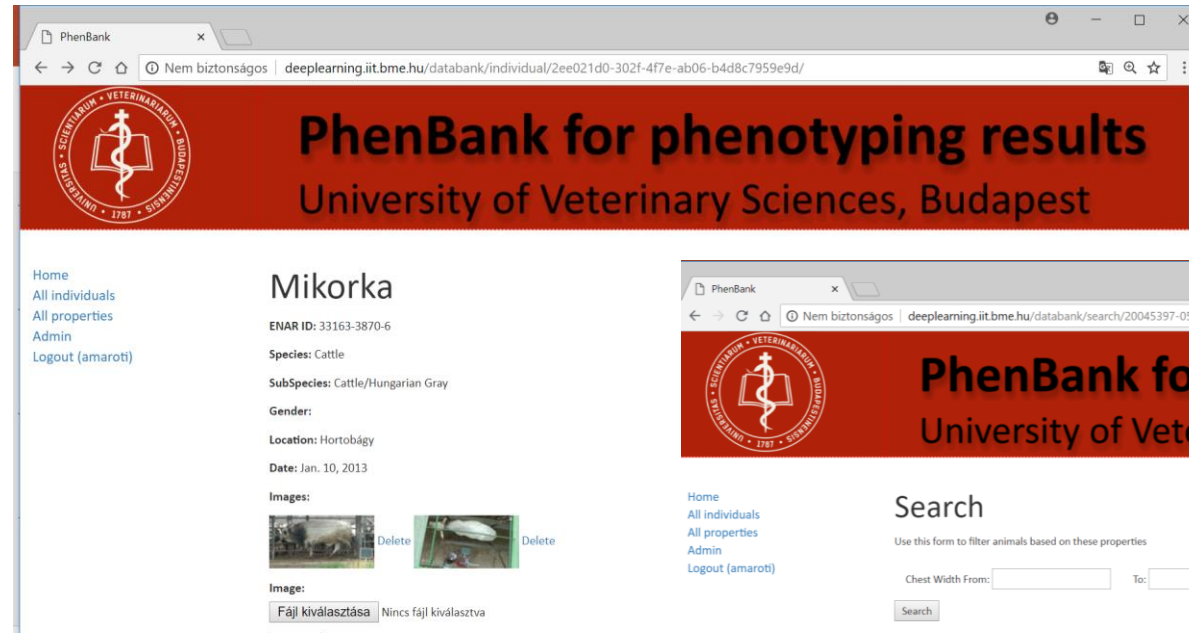
Phenbank + Genbank

Meta-analisy



phenbank.eu – a pilot HG project

- Pictures, images (CT,Ultrasound, MRI)
- Pedigree
- Body measurements
- Performance test results
- GenBank link - NGS bulls, microarray results...





Thank you for the attention!