Biotechnology in small ruminant reproduction: an international experience, 2024
CZU Prague, hybrid seminar

Gene banking of Hungarian local sheep breeds

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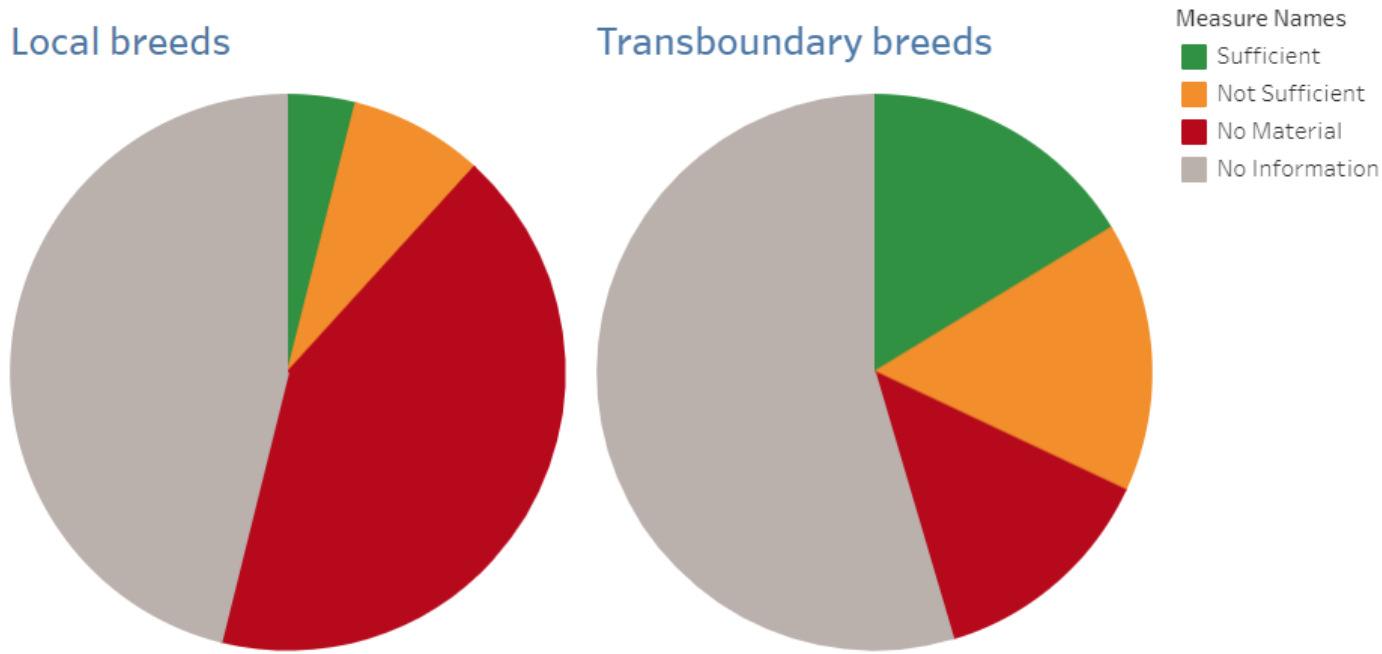
Domestic Animal Diversity Information System (DAD-IS)

SDG indicator 2.5.1b

Number of local and transboundary breeds for which sufficient genetic materials are stored for reconstitution

World | Region | Country



Last update: 28/03/2024

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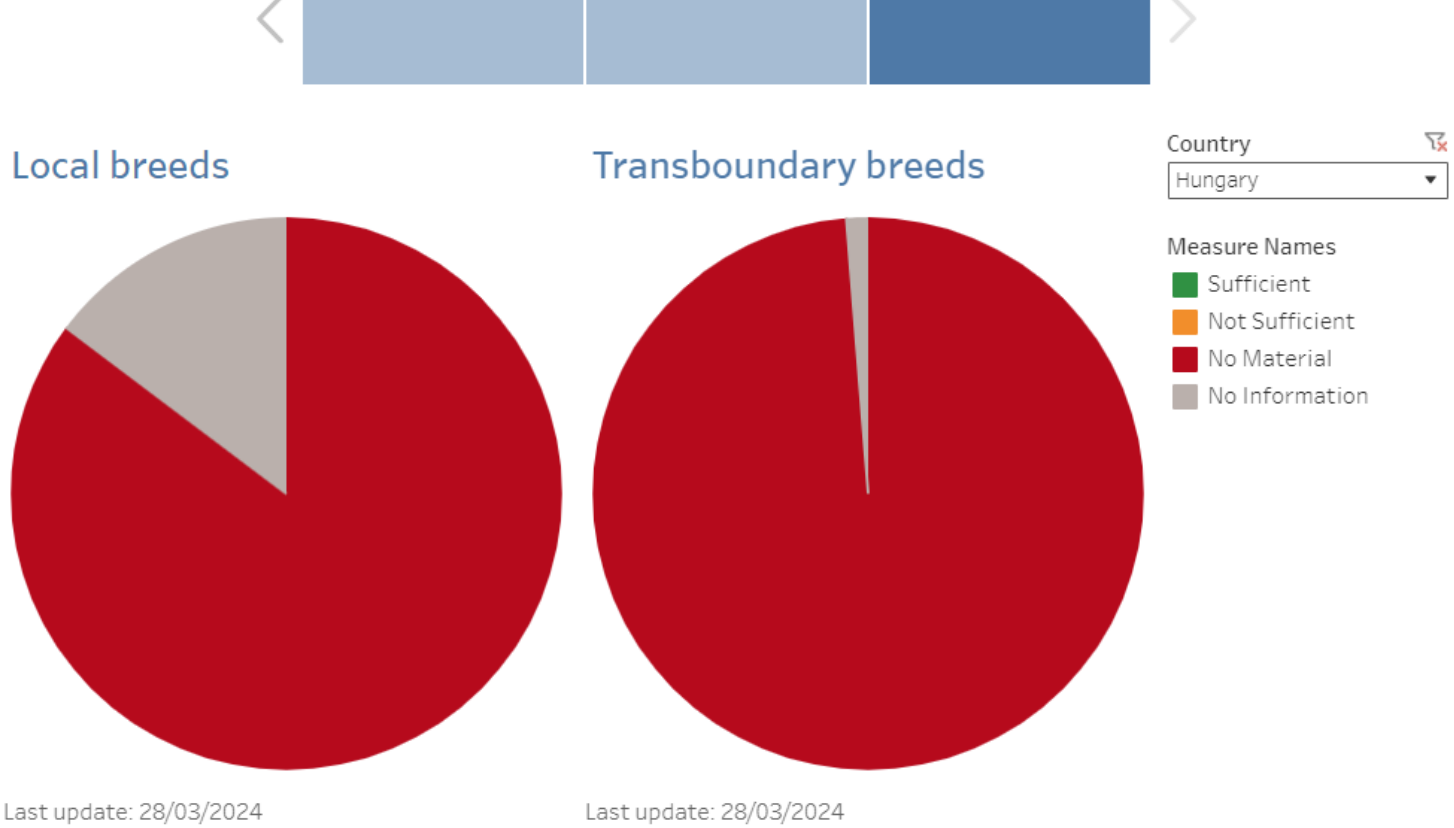


Caption :
Cigàja sheep.

Year :
-

Gender :
unkn.

Photo credit :
-

Locality :
-

Cigàja / Hungary (Sheep)

Most common name	Cigàja
Language	hun.
Transboundary breed name	Tsigai
Geographical classification	International
Breed Classification (adaptedness)	Native
Risk level	
SDG local risk status	At risk
Detailed local risk status	Vulnerable
Transboundary Breed Risk Level	Not at risk

Cryo Programmes

Year	2020
Semen samples	
Semen males donors	
Embryos Samples	
Embryos donors total	
Embryos donors males	
Embryos donors females	
Oocytes samples	

Caption :
Cikta ram.

Year :
1993

Gender :
male

Photo credit :
-

Locality :
-

Cikta / Hungary (Sheep)

Most common name	Cikta
Language	hun.
Transboundary breed name	Cikta
Geographical classification	Regional
Breed Classification (adaptedness)	Native
Risk level	
SDG local risk status	At risk
Detailed local risk status	Endangered
Transboundary Breed Risk Level	At risk

Cryo Programmes

Year	2020
Semen samples	
Semen males donors	
Embryos Samples	
Embryos donors total	
Embryos donors males	
Embryos donors females	
Oocytes samples	

Caption :
A herd of Racka sheep.

Year :
1993

Gender :
male

Photo credit :
-

Locality :
-

Hortobágyi Magyar Racka / Hungary (Sheep)

Most common name	Hortobágyi Magyar Racka
Language	hun.
Transboundary breed name	Racka
Geographical classification	Regional
Breed Classification (adaptedness)	Native
Risk level	
SDG local risk status	At risk
Detailed local risk status	Vulnerable
Transboundary Breed Risk Level	Not at risk

Cryo Programmes

Year	2020
Semen samples	
Semen males donors	
Embryos Samples	
Embryos donors total	
Embryos donors males	
Embryos donors females	
Oocytes samples	

Caption:
Racka rams.

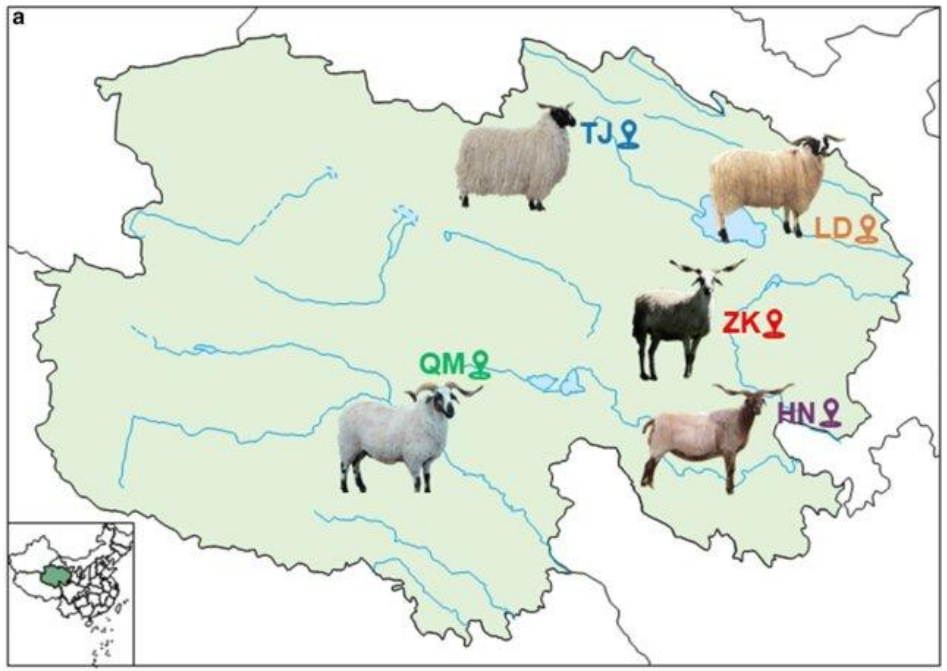
Year:
2004

Gender:
male

Photo credit:
Ms Beate Milerski; Germany

http://lh4.ggpht.com/-8w0b8yHimJs/TezyhHIjj5I/AAAAAAAAG3M/tgN6xxeFwWk/DSC_5627_thumb9_thumb.jpg?imgmax=800

DOI: 10.1007/s11250-021-02605-6



b Sample information of five indigenous Tibetan sheep breeds in Qinghai

Breed	Code	Sampling location	Altitude (m)	Latitude (°N)	Longitude (°E)
Valley	LD	Ledu County, Haidong Prefecture	2685	36.58	102.51
Oula	HN	Henan Mongol Autonomous County, Huangnan Tibetan Autonomous Prefecture	3524	34.18	101.67
Zeku	ZK	Zeku County, Huangnan Tibetan Autonomous Prefecture	3419	35.39	100.95
Grassland	TJ	Tianjun County, Haixi Mongol and Tibetan Autonomous Prefecture	3875	37.87	98.81
Zhashijia	QM	Qumarlêb County, Yushu Tibetan Autonomous Prefecture	4452	35.03	96.37

- 78 rams
- Training
- 24 rams selected
  - 11 Cigája
  - 7 Cikta
  - 6 Racka
- Semen collection
  - AV
- Volume, cc
- Pre-freeze QC
  - Motility (PhaCo)
  - Morphology+ viability (Kovács-Foote)

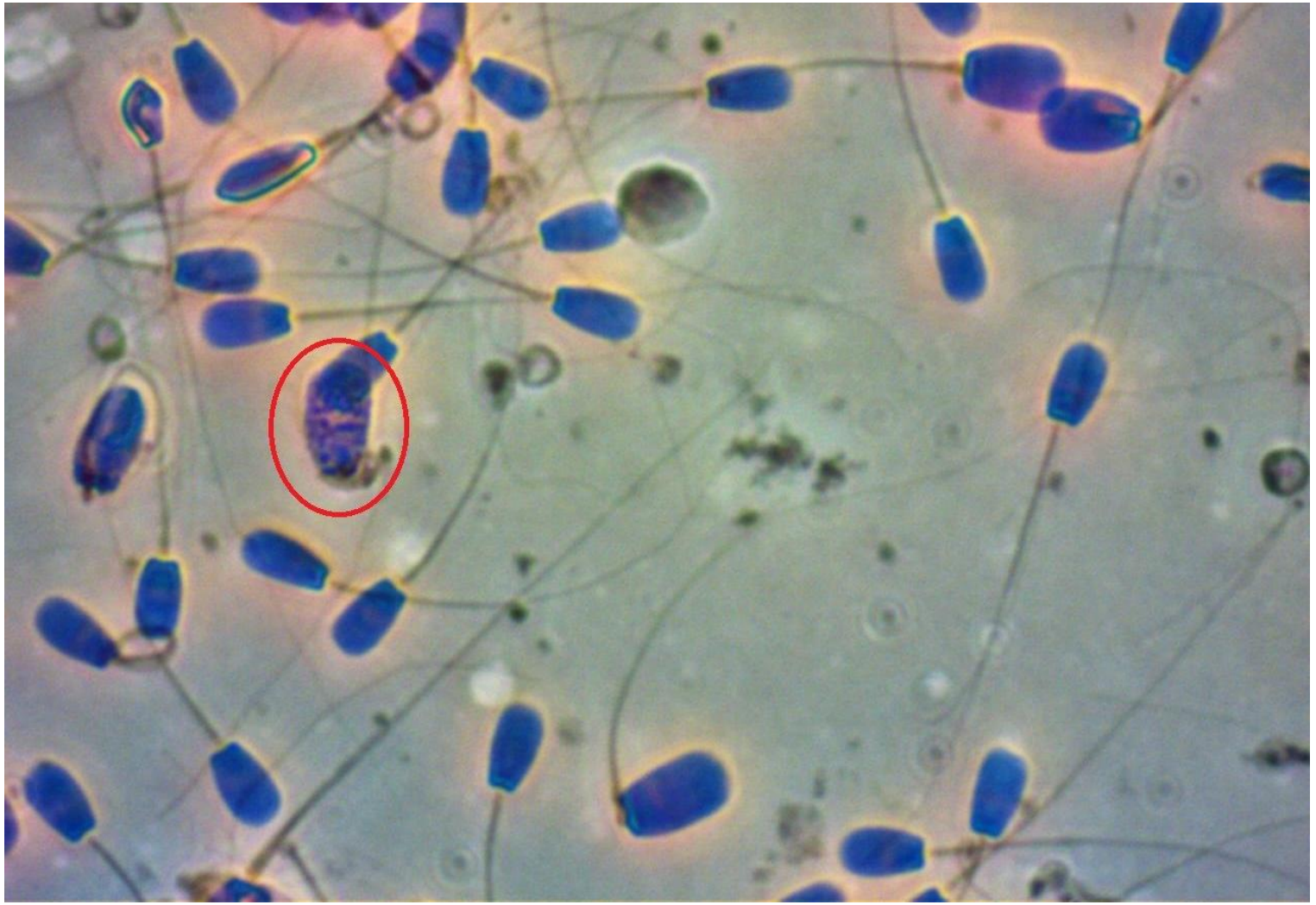
- Cryopreservation
  - Andromed
  - 0.5 ml straws (200)
  - Styrofoam box
- Post-thaw QC (representative n=73 straws)
  - Motility (CASA)
  - Morphology+ viability (Kovács-Foote)

  - **Feulgen (PhaCo 40x)**
    - **(Sperm head morphology)**
    - **Sperm head morphometry (100)**
    - **Chromatin status (200)**

Gene bank

Breeds	Number of rams	Number of ejaculates collected for further analysis and processing	Number of ejaculates frozen	Number of samples frozen (single, or pooled of two ejaculates)	Number of samples stored in the gene bank
Cigája	11	228	142	106	92
Cikta	7	135	80	65	60
Racka	6	98	63	48	47
Total	**24**	**461**	**285**	**219**	**199**

Barth-Oko (1989):
Abnormal morphology of bovine spermatozoa

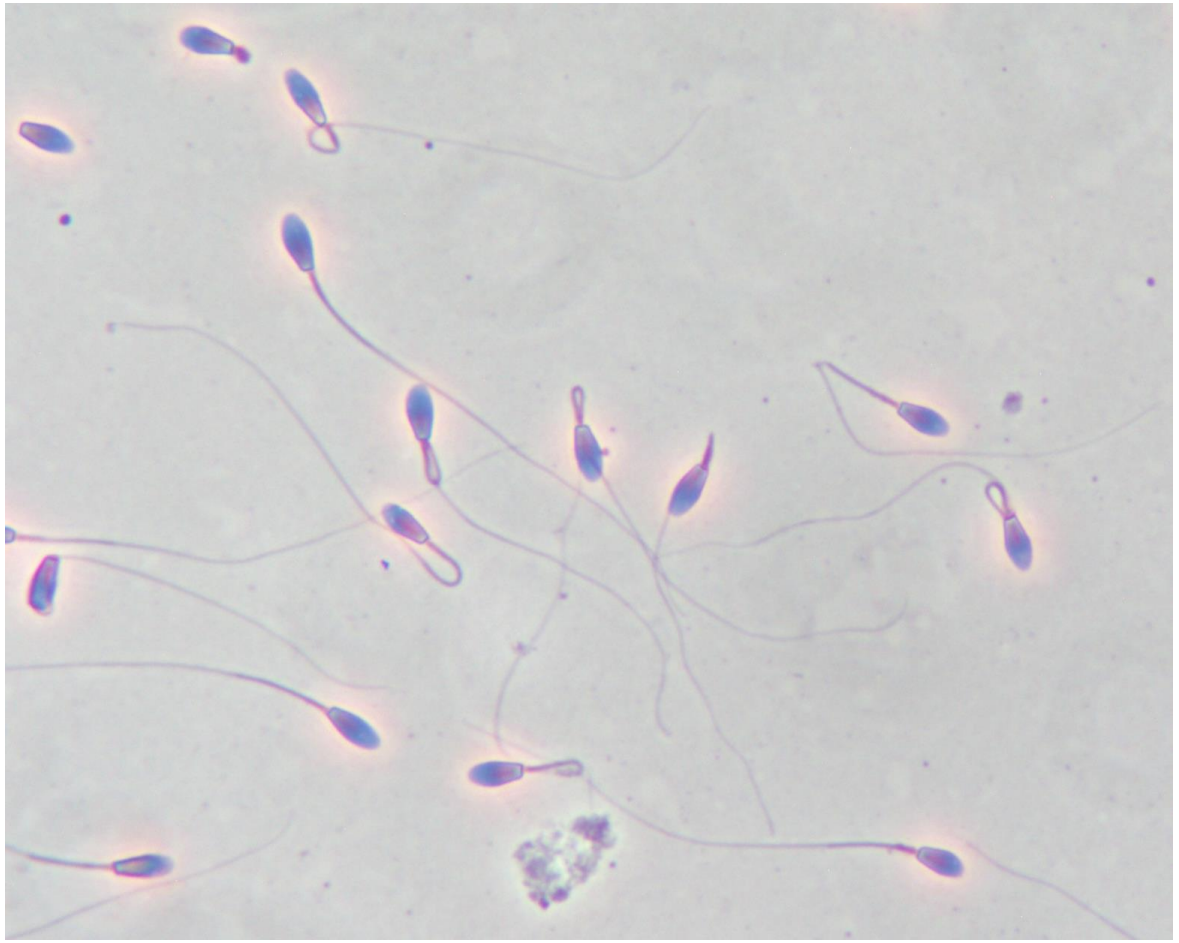


Abnormal bull sperm

FEULGEN staining of bovine sperm nucleus

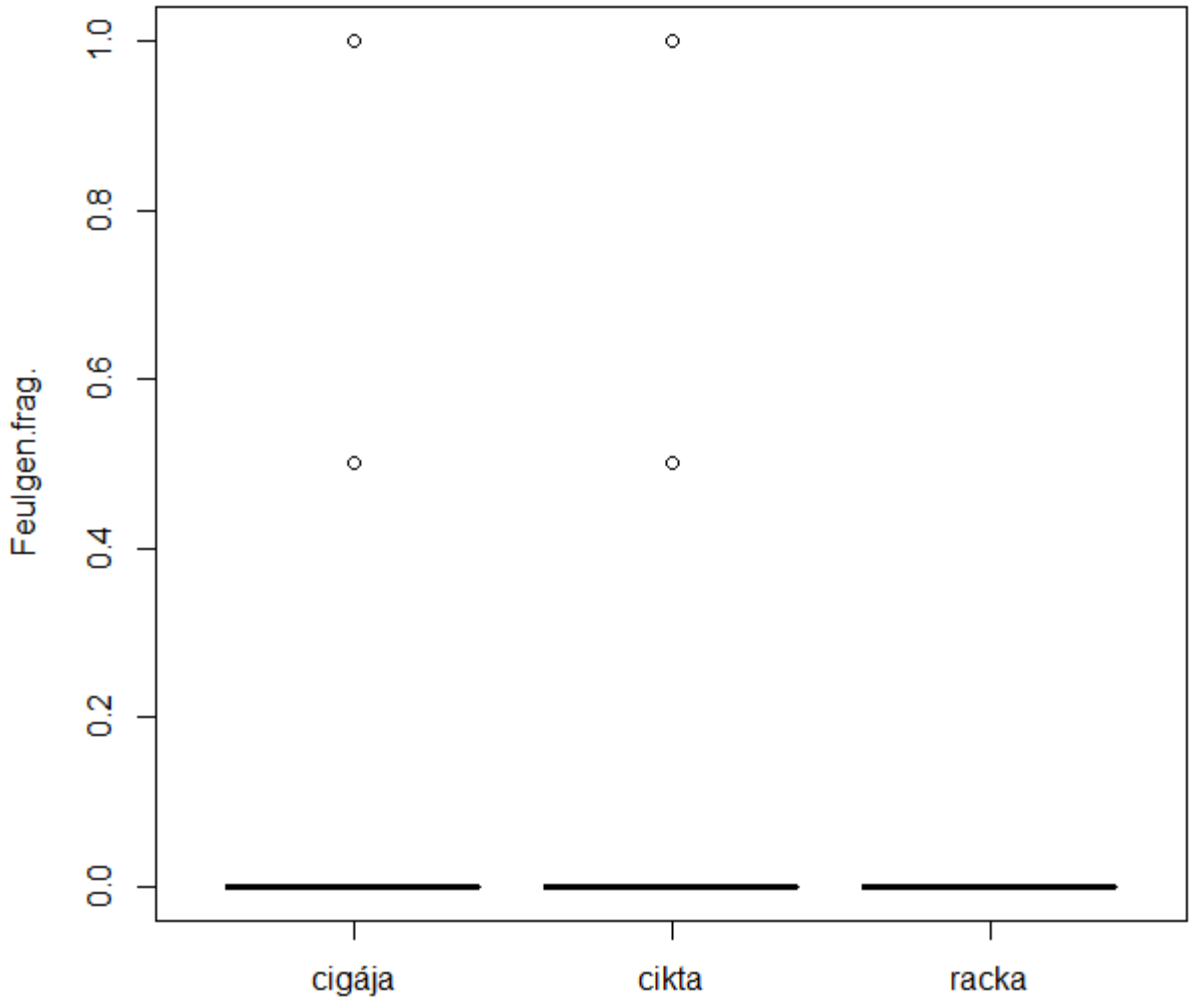
Field studies

Przewalski’s horse

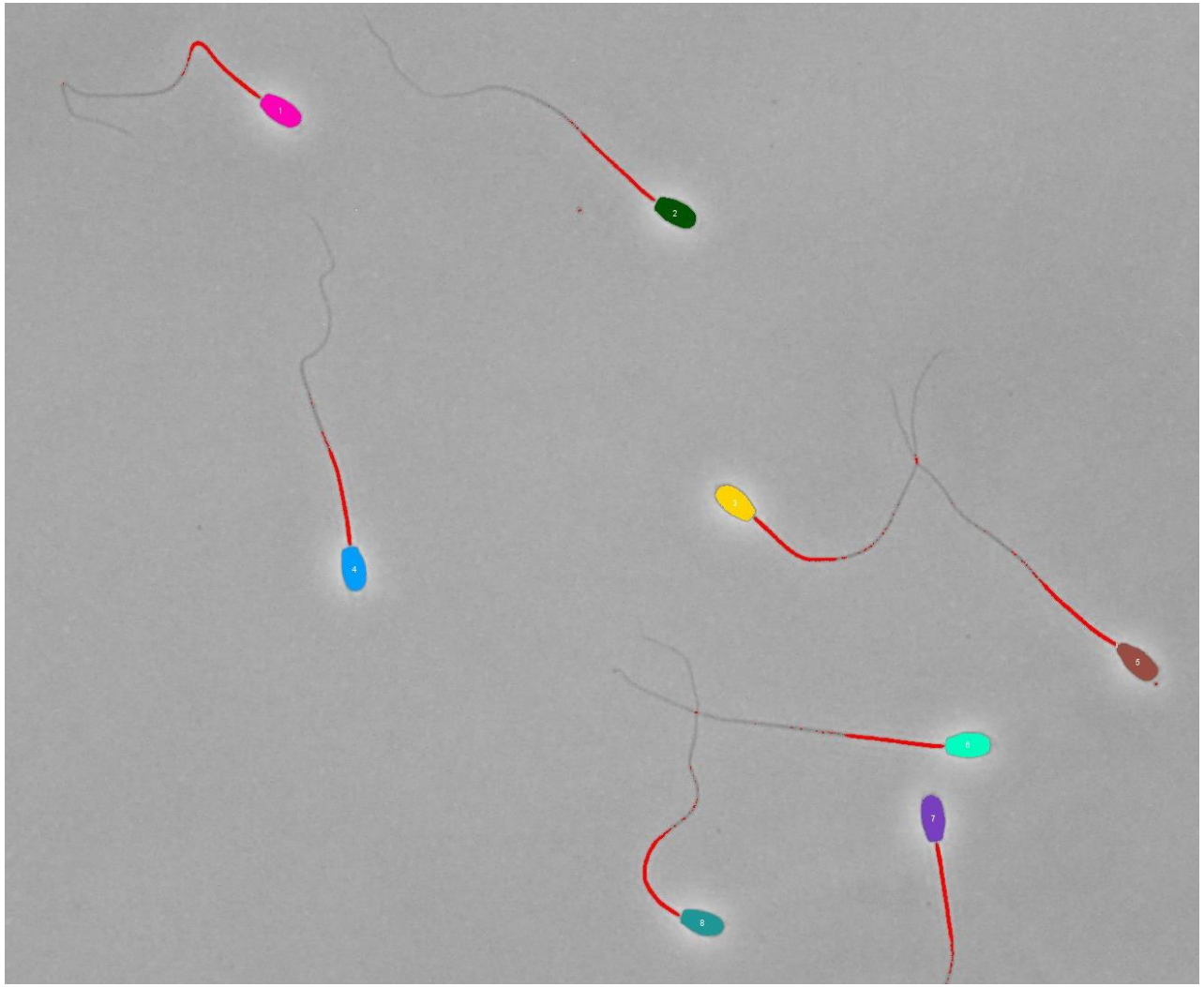


Reindeer

Sperm chromatin status

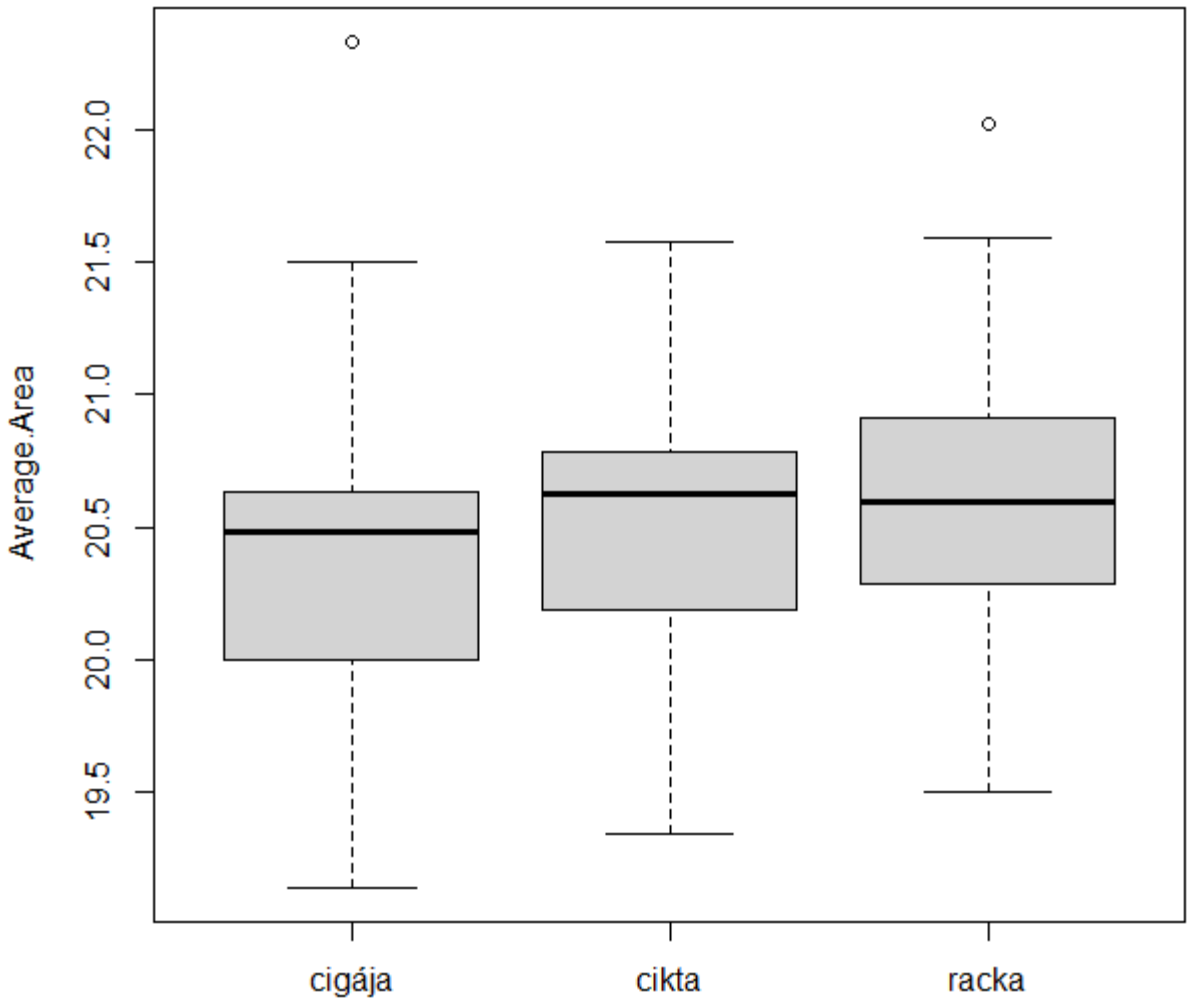


Sperm head morphometry - ImageJ

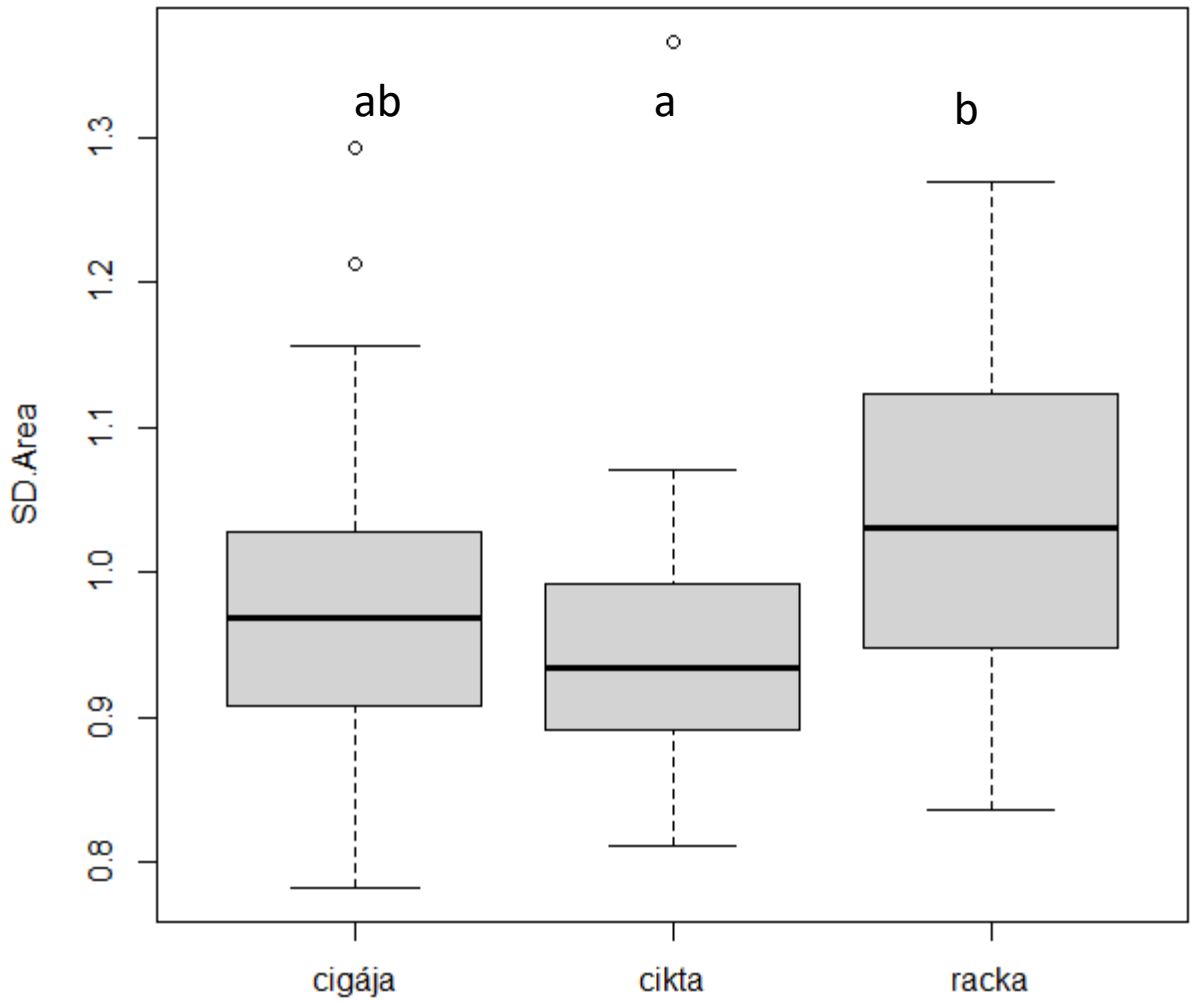


Area, perimeter

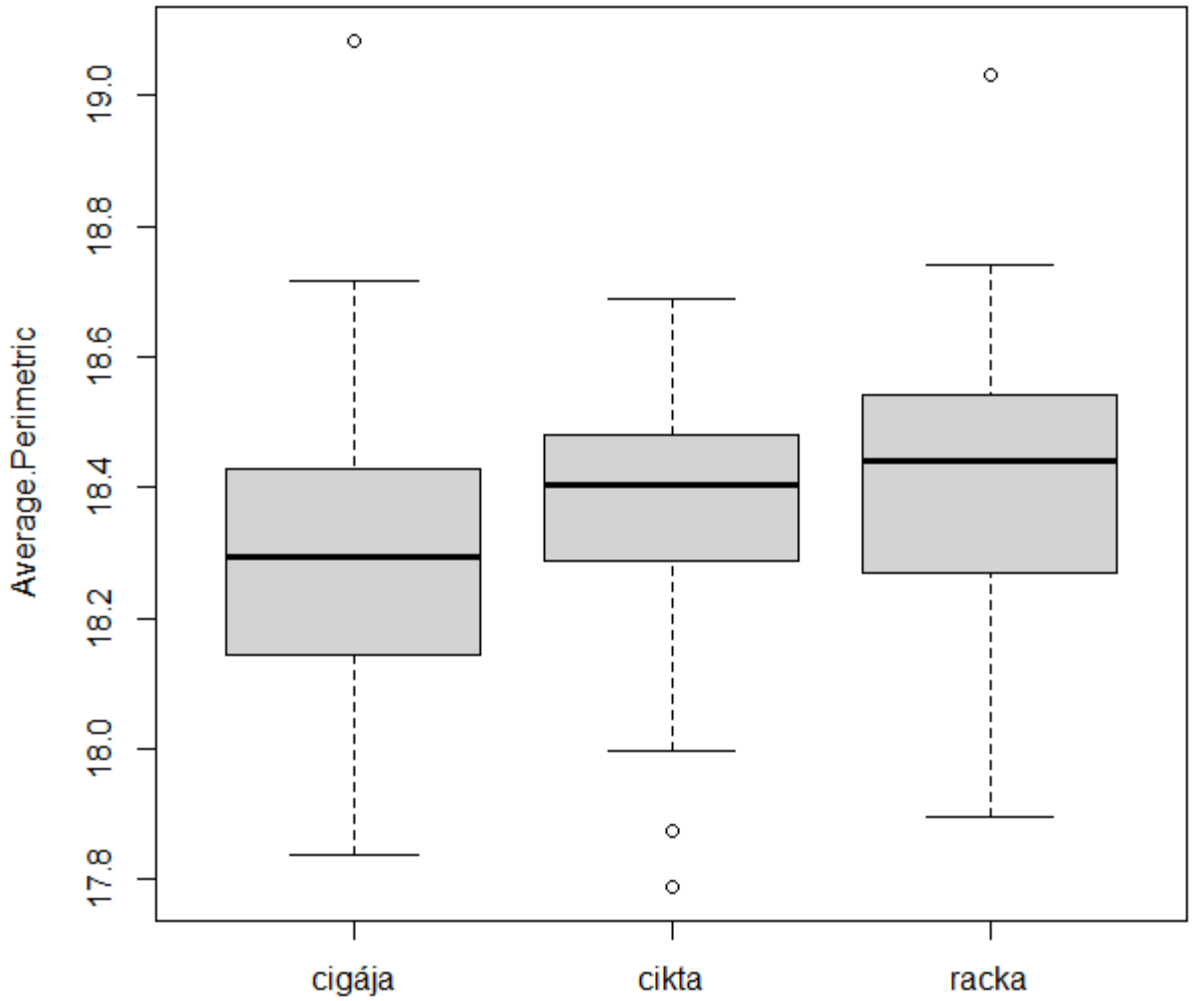
Sperm head area - mean



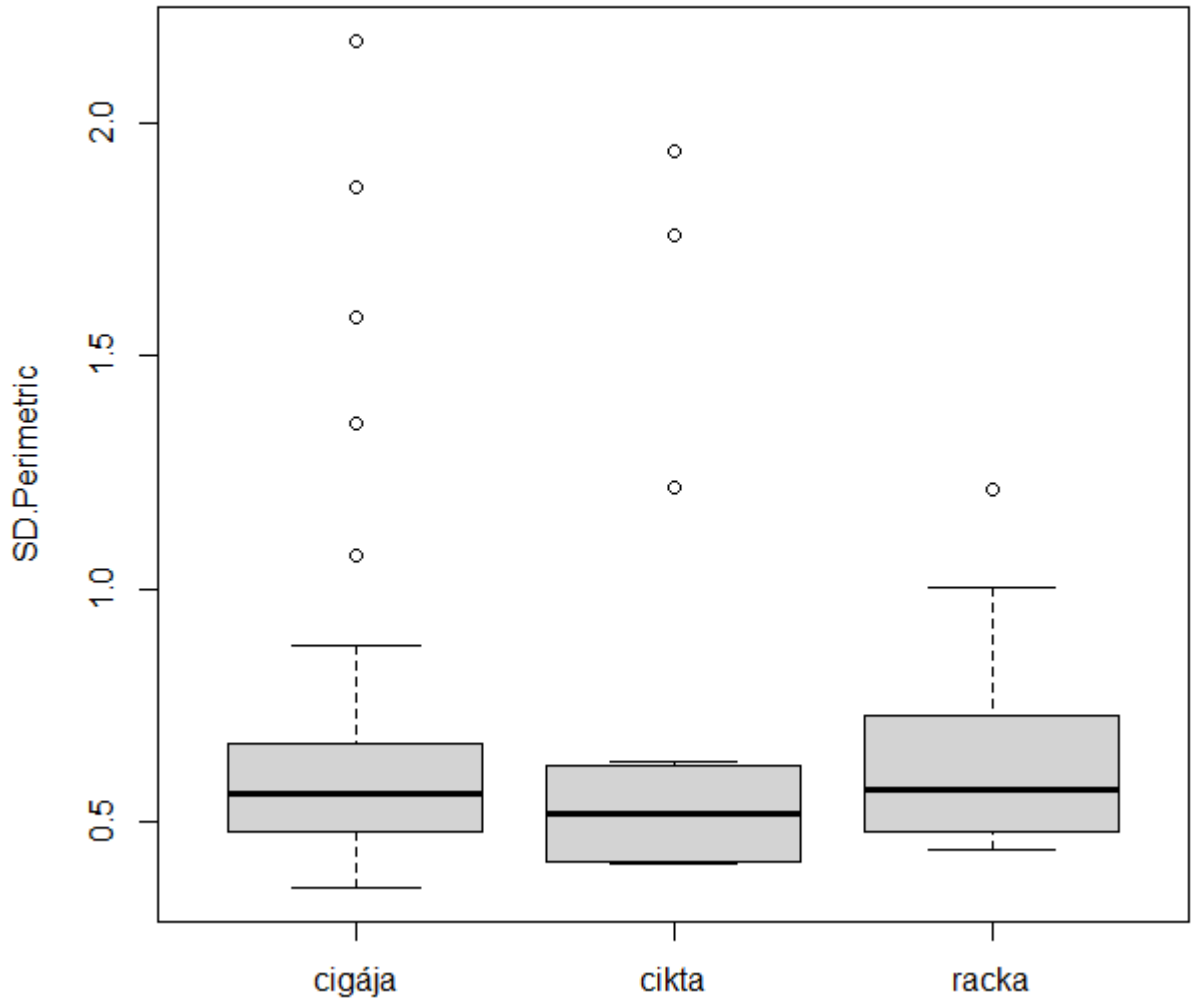
Sperm head area - SD



Sperm head perimeter - mean



Sperm head perimeter - SD



SpermTree

A database of sperm morphology across the animal kingdom

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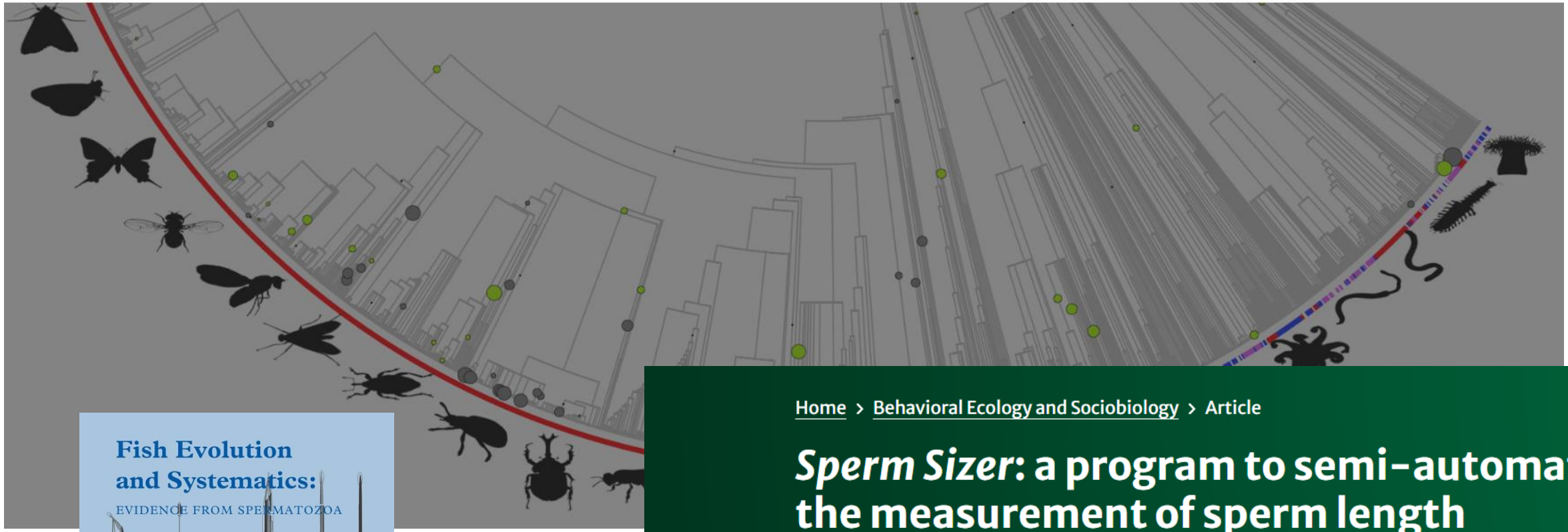
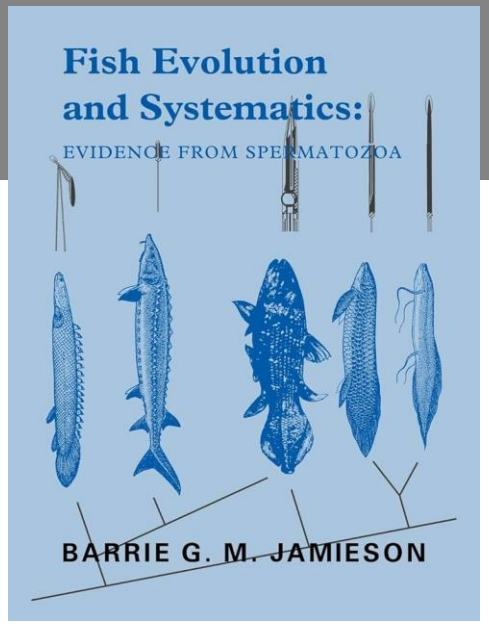




Sperm Sizer: a program to semi-automate the measurement of sperm length

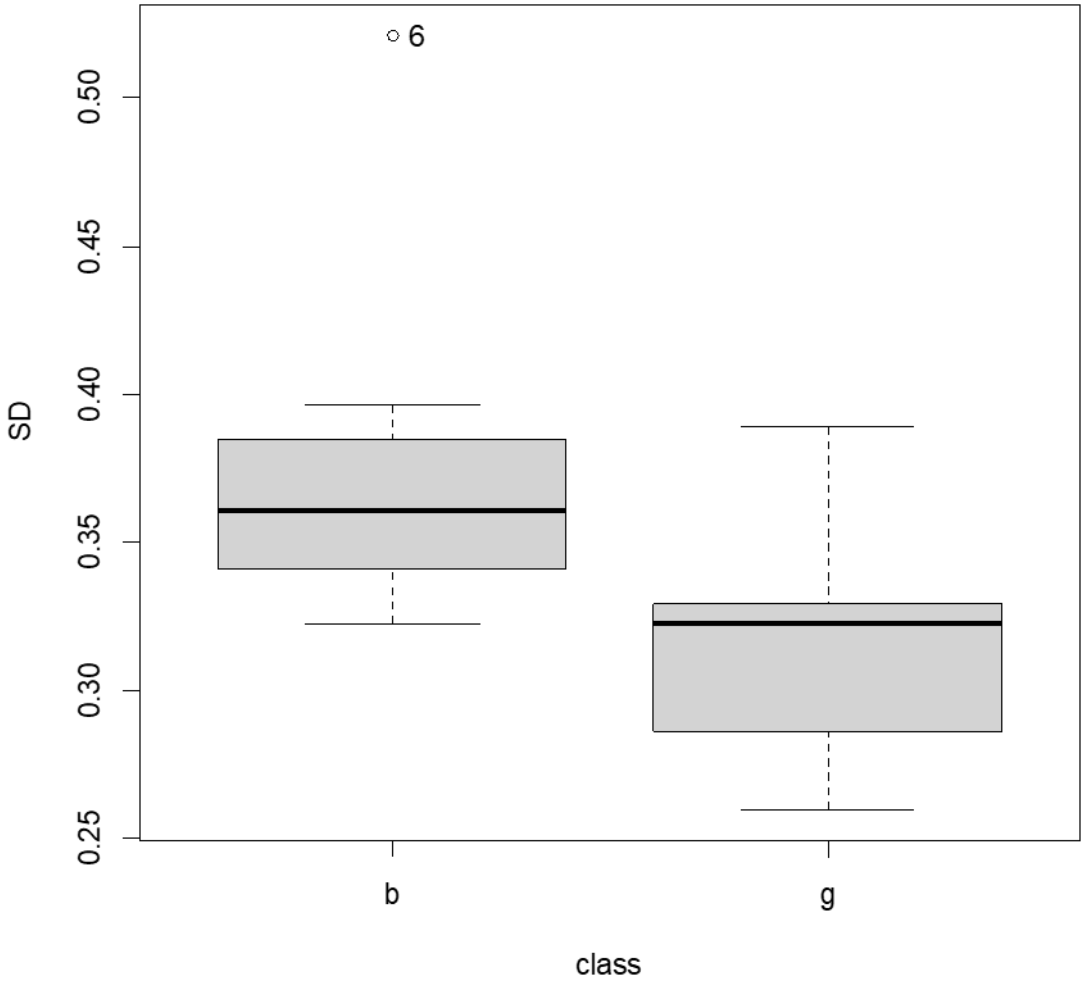
Methods Papers | Published: 27 April 2021

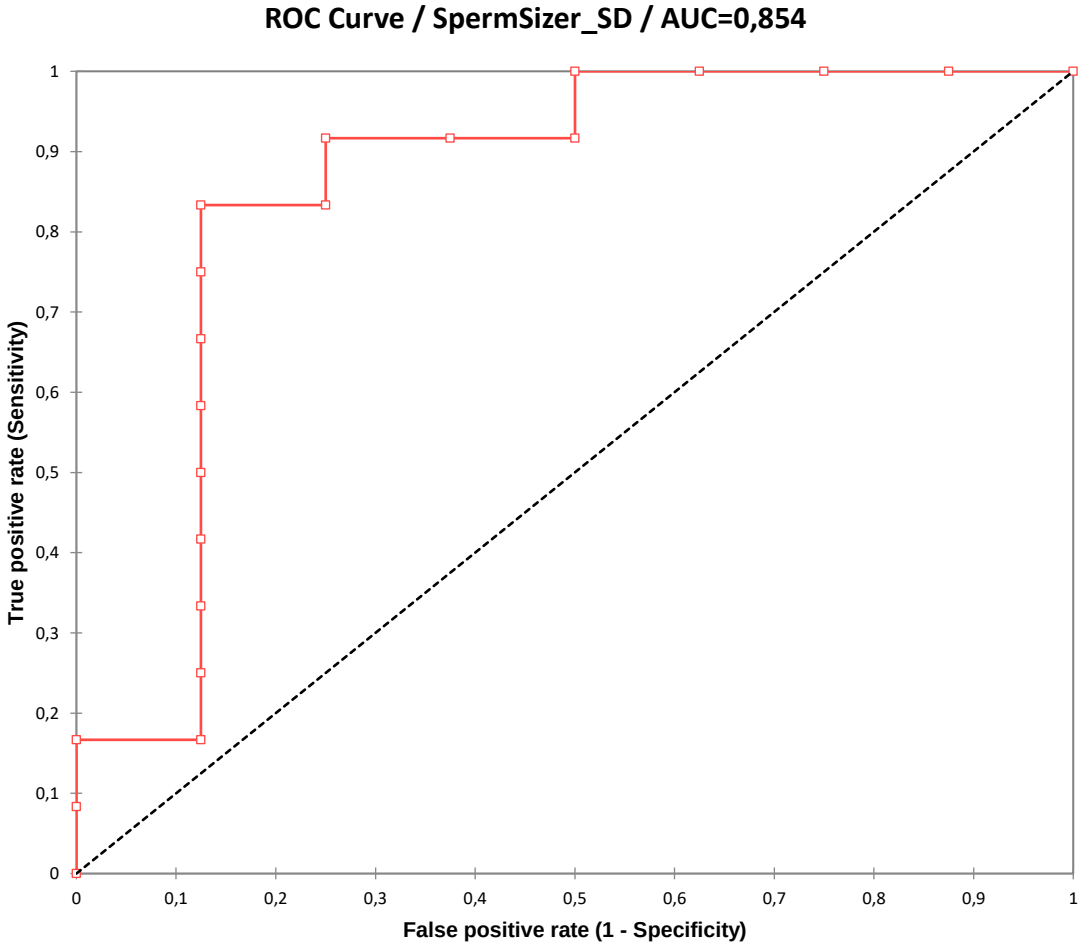
Volume 75, article number 84, (2021) Cite this article

Callum S. McDiarmid ✉, Roger Li, Ariel F. Kahrl, Melissah Rowe & Simon C. Griffith

SpermSizer analysis of good-bad fertility bulls (n=20)

data: sperm head length SD by class
W = 82, p-value = 0.007303





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Reproduction in Domestic Animals WILEY

ORIGINAL ARTICLE

Evaluation of domestic animal sperm head morphology via flow cytometric DNA labelling and pulse shape analysis using bull and stallion spermatozoa as model species

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Abstract

The aim of the present study was to test a rapid, robust flow cytometric technique for the detection of sperm head abnormalities of domestic bulls and stallions. The so-called PulSA approach detects the pulse profiles of propidium-iodide labelled spermatozoa. In the first experiment, species-specific threshold values were established on sperm samples that were tested for sperm head abnormalities with a classic visual morphology analysis. In the second experiment, serial mixtures of bull and stallion spermatozoa mimicking different percentages of sperm head abnormalities were analysed. Non-metric multidimensional scaling showed a clear separation between the normal and mixed samples. The PulSA approach may be a useful tool in identifying sub- or infertile breeding males as well as in studying the evolutionary aspects of sperm morphology and morphometry.

KEYWORDS
abnormalities, bull, PulSA, sperm quality, stallion

Acknowledgements

"*Ex situ*, or *in vitro* preservation of the genetic stock of protected native and endangered agricultural animal breeds, and support for advisory activities preventing genetic narrowing" (VP4-10.2.1.2-17)

Thanks!