Luke Genetic Resources
Domestic Animals

Successful implementation of epididymal sperm in native farm animal conservation schemes – a Finnish update

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DVM Heli Lindeberg, Senior scientist

20.5.2026

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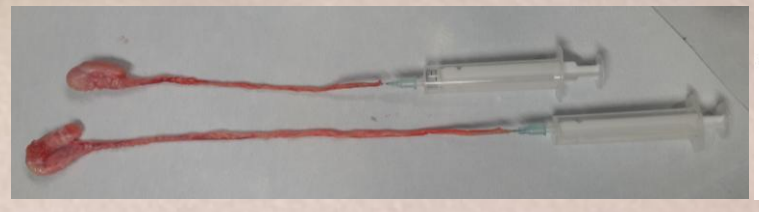
Photo: Tuula-Marjatta Hamama

Epididymal sperm collections complement ejaculated semen collections



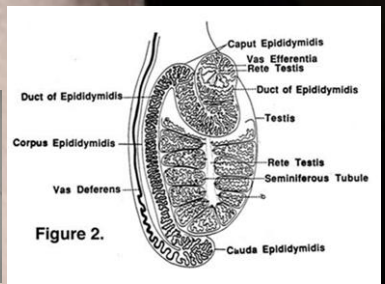


Figure 2.

Photos: Tuula-Marjatta Hamama/Heli Lindeberg

Ejaculated semen or epididymal sperm?

Ejaculated semen:

– Requires a certified collection station, which is expensive to establish and maintain
– Only limited number of donors can be collected:
  - ➢ Used in breeding schemes implementing high selection intensity
  - ➢ Genetic diversity ↓
\+ Repeated collections from each donor executed:
  - ➢ Large number of doses/donor obtained
  - ➢ Sex-sorted semen (X and Y) can be produced
\+ Sanitary status of collected semen is under control

Epididymal sperm:

\+ Collection does not require expensive infrastructure
\+ Large number of donors can be collected
  - ➢ Suitable for conservation schemes, where the genetic diversity is on focus
  - ➢ Genetic diversity↑
\+ Allows sperm collection from donors that are not trained for human handling
\+ The guidelines to control the sanitary status of collected sperm are given through an amendment by the Ministry of Agriculture and Forestry
– Only one collection event possible
  - ➢ Limited number of doses/donor

What is needed to get epididymal sperm straws for a common use?

- An amendment to the Decree of the Ministry of Agriculture and Forestry on the requirements for the control of animal diseases for gametes and embryos collected for domestic trade (2024)
- Species included: cattle, pigs, sheep, goats and horses

Requirements:

- Registered collection station and veterinarian
- Quarantine conditions (on farm/after collections)
- List of diseases to be tested/species

In cattle

Photo: Heli Lindeberg

Photo: Iida Saari

Photo: Harri Ala-Kapee

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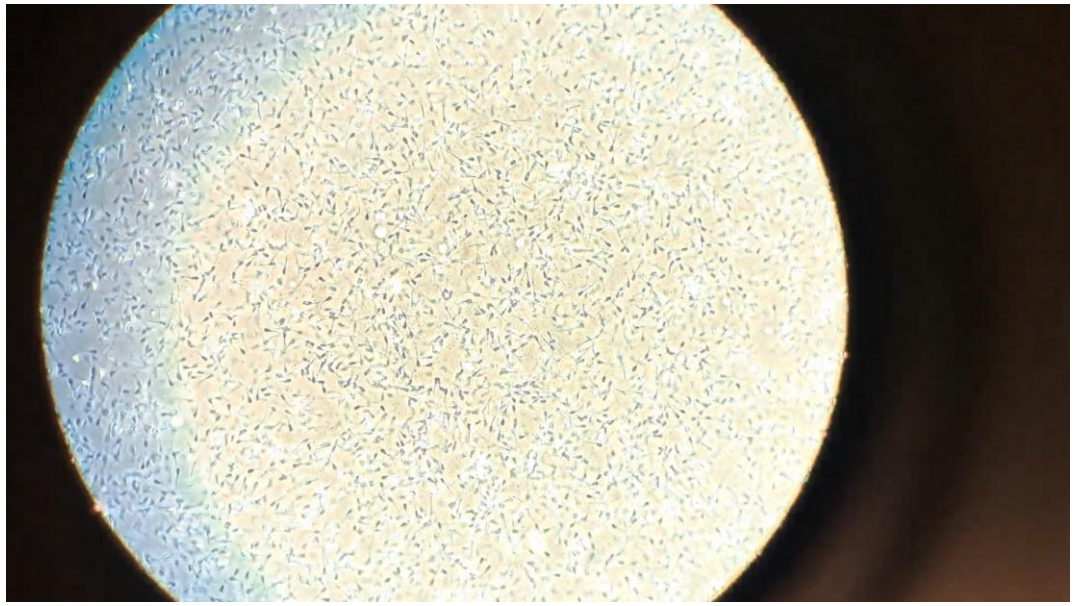
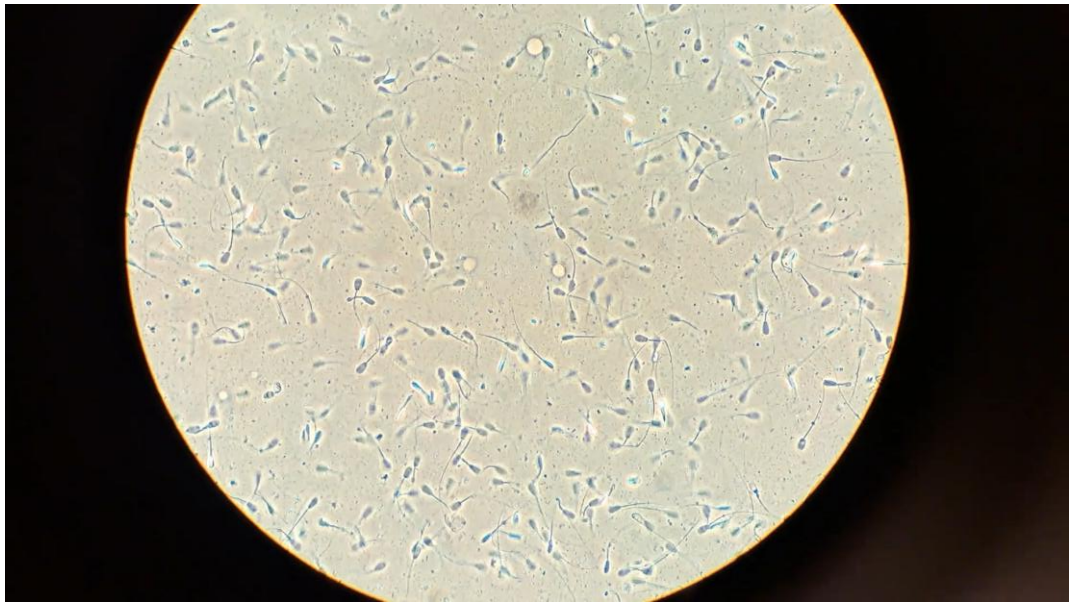
20 million epididymal sperm needed for AI in cattle

Ahlmanin Viiru (70 AI doses), Pelson Unikko (156 AI doses), Ahlmanin Vihne (31 AI doses)

Alhmanin Vihne after collection



Post-thaw



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In vitro embryo production:

Lypsikki x Ahlmanin Viiru:
18 embryos

Onneli x Ahlmanin Viiru:
8 embryos

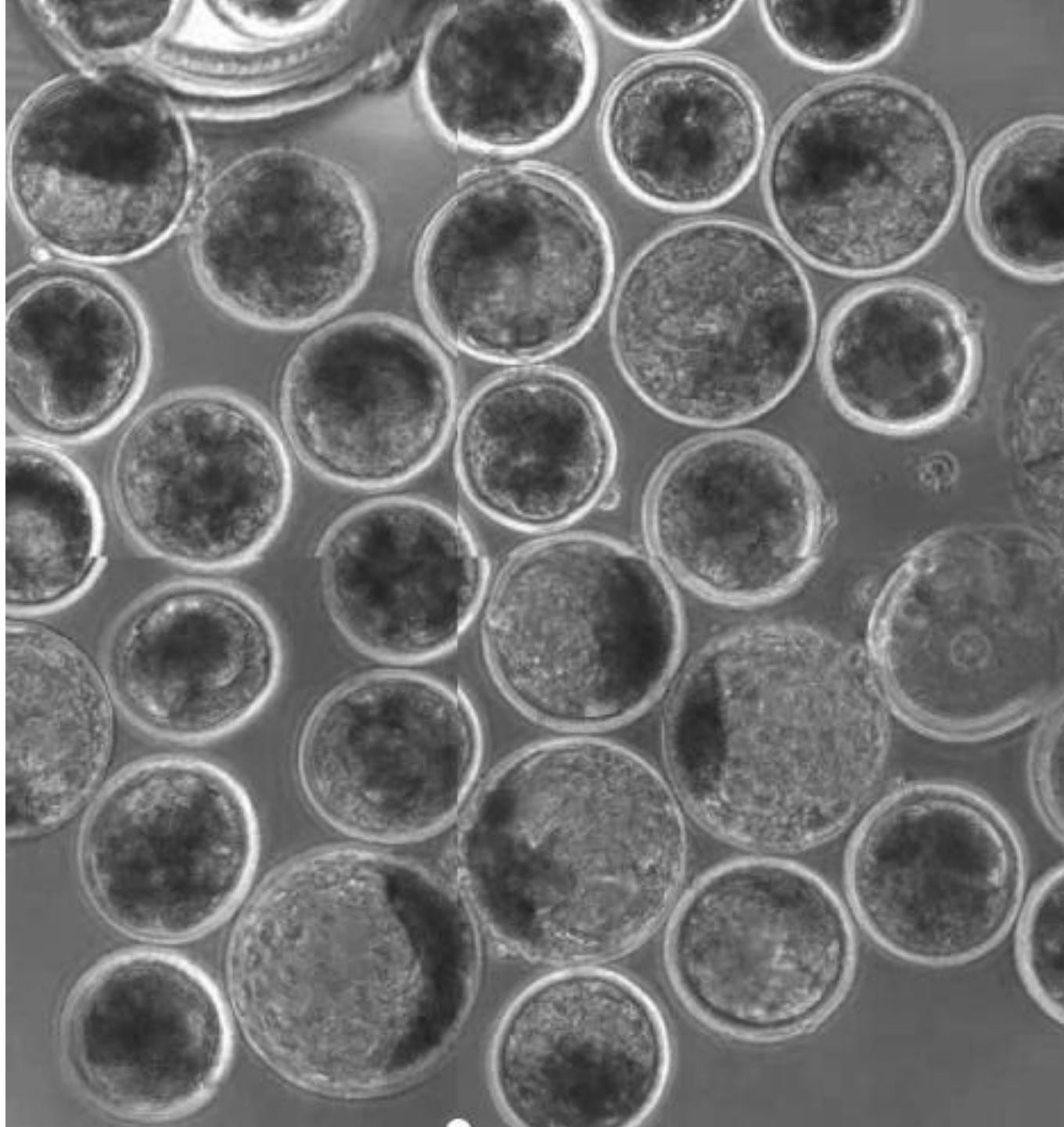
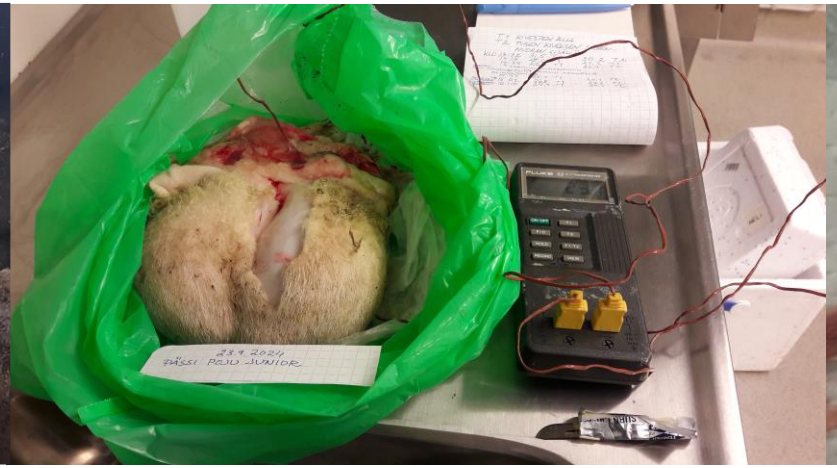
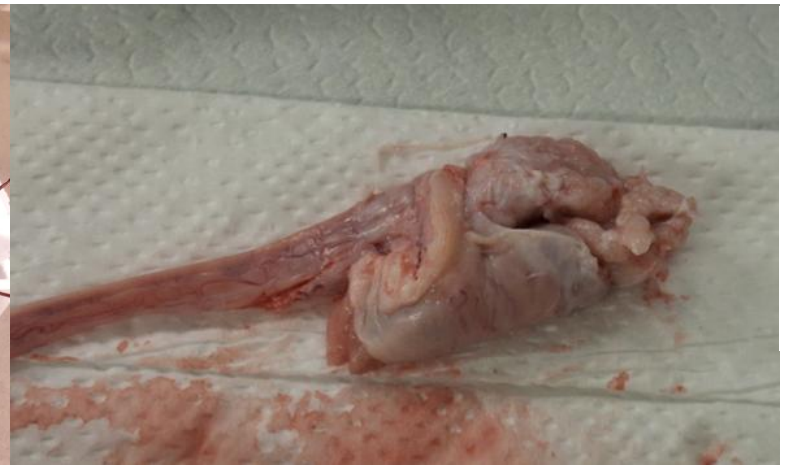


Photo: Marjut Vertanen

In small ruminants

Sheep: two rams



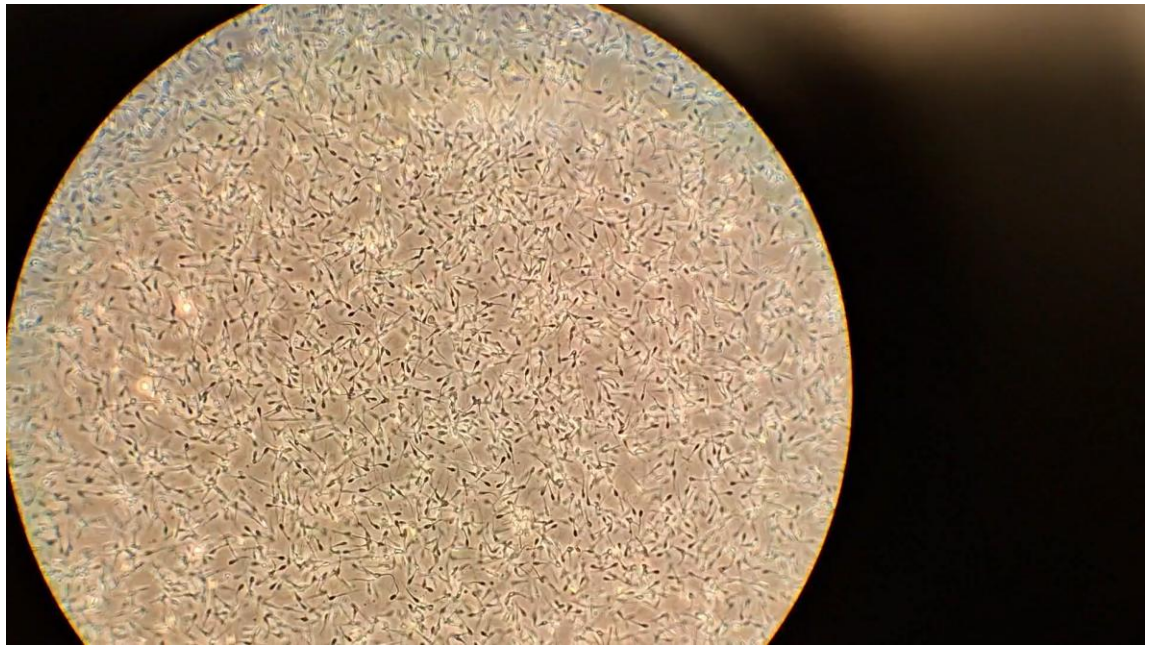


Photos: Heli Lindeberg

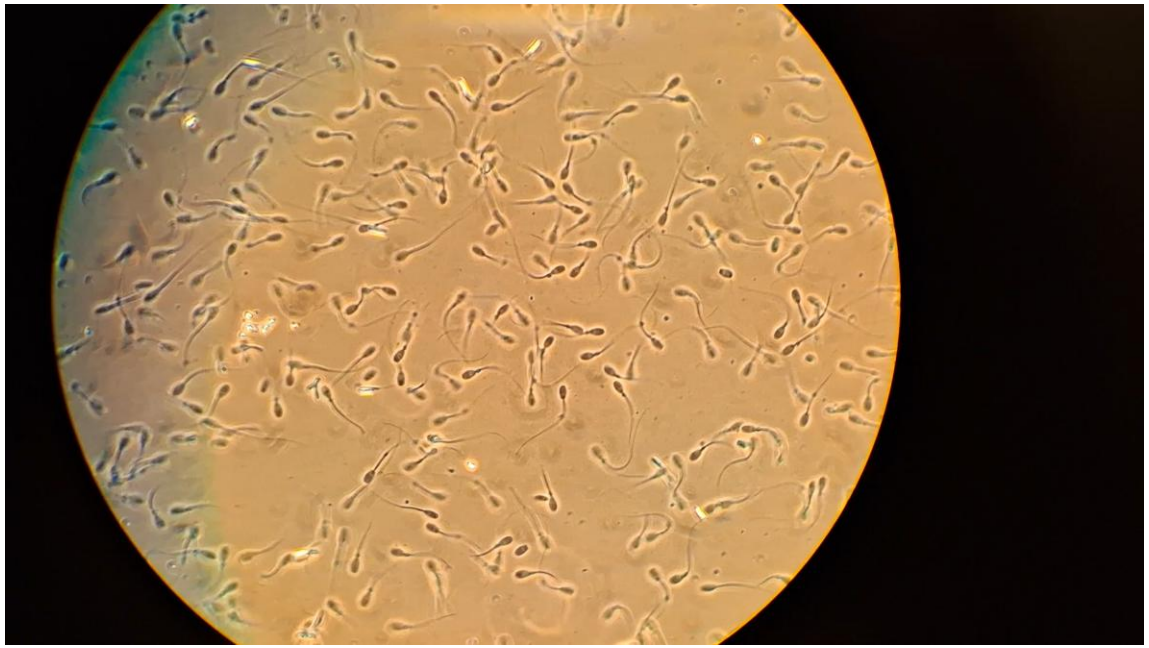
200 million epididymal sperm is needed for ”shot in the dark” AI in sheep

Poju junior (36 AI doses), Joker CO (24 AI doses)

Poju junior after collection



Post-thaw (AI dose =>4 straws)



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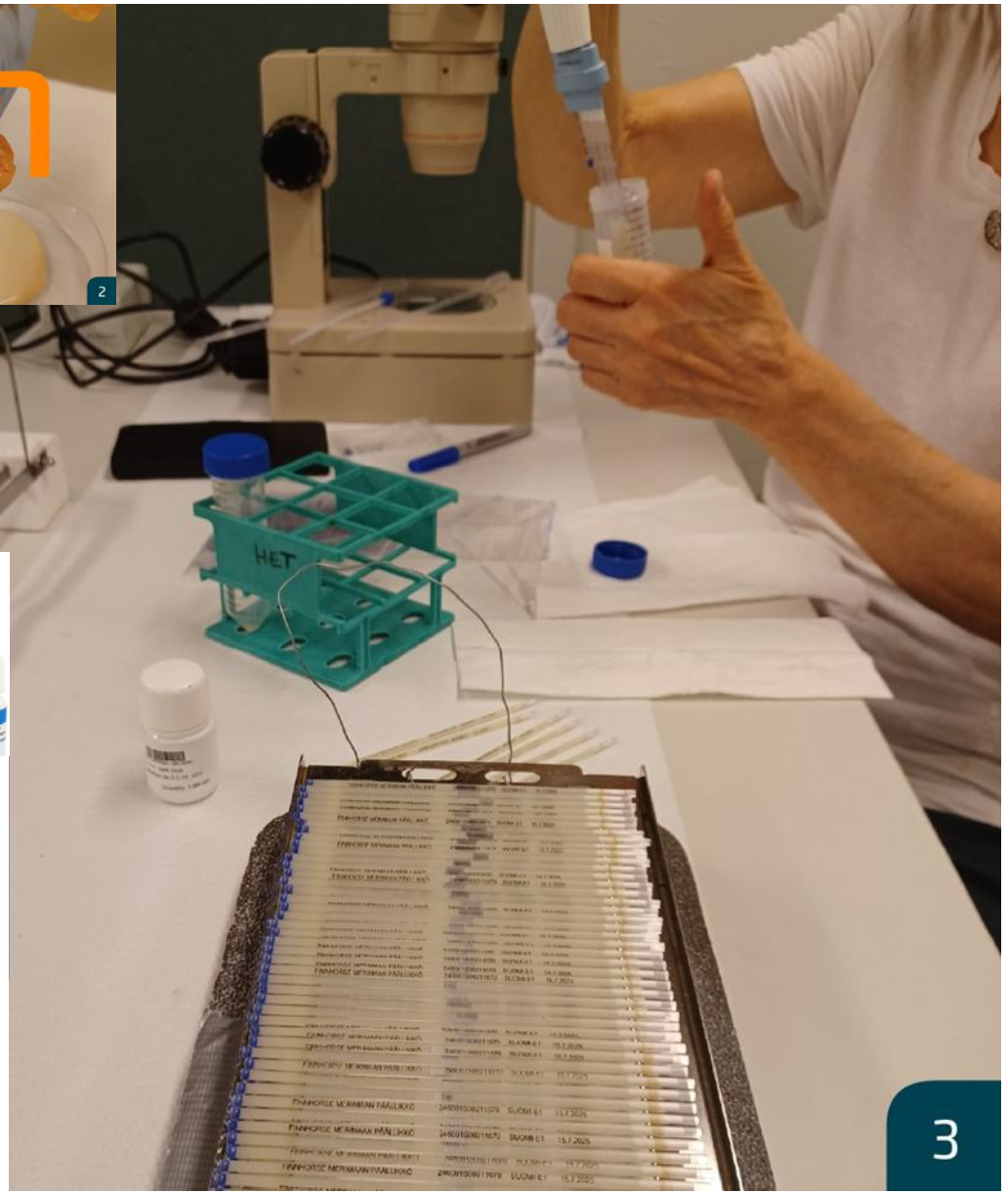
In horses

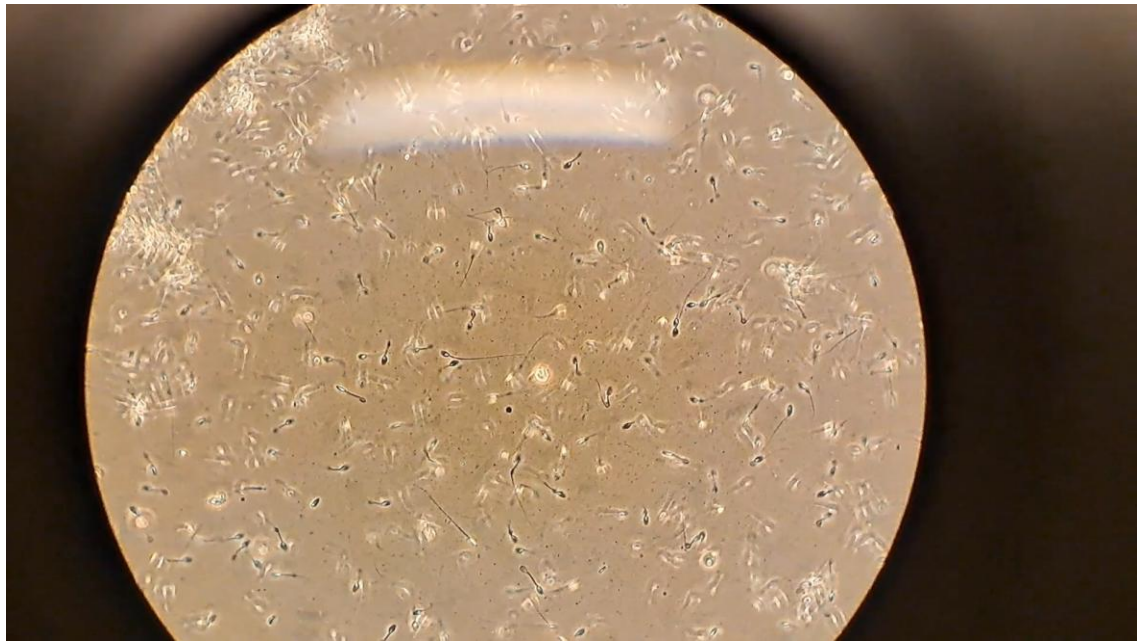
El Reino: 85 ejaculated semen and 20 epididymal sperm doses



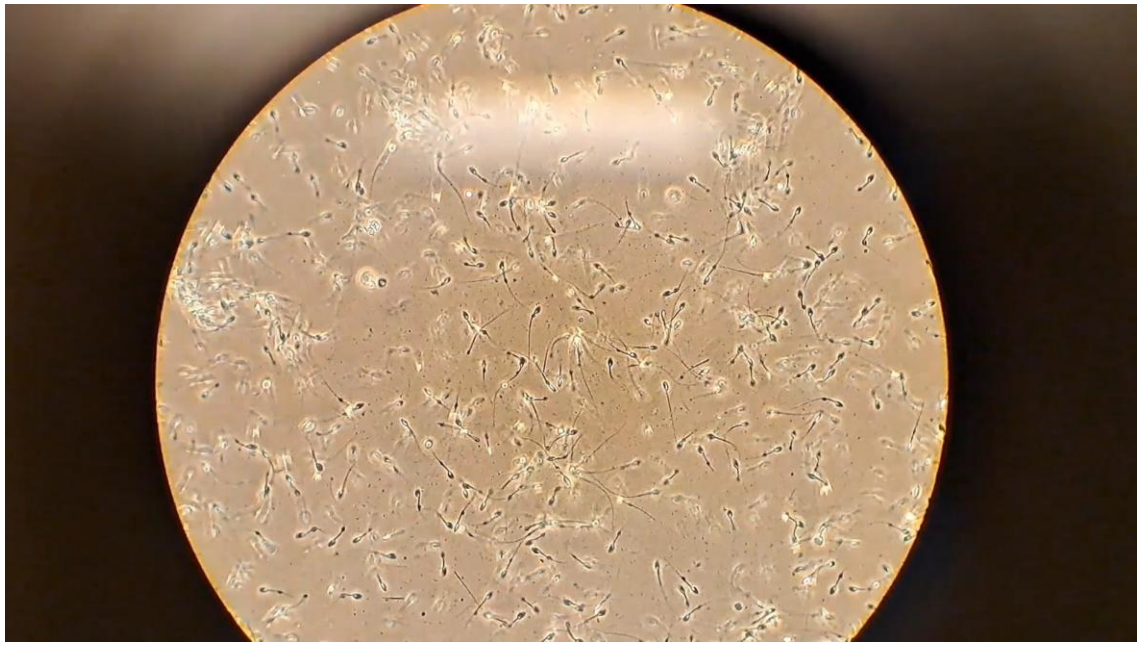
250 million progressively motile sperm needed for AI in horses:

Kuukson Kaipaus (14 AI doses), Kouta (27 AI doses), Pippurinen (13 AI doses), Merimaan ruhtinas (22 AI doses), El Reino (20 AI doses), Merimaan Päällikkö (24 AI doses)

El Reino after collection



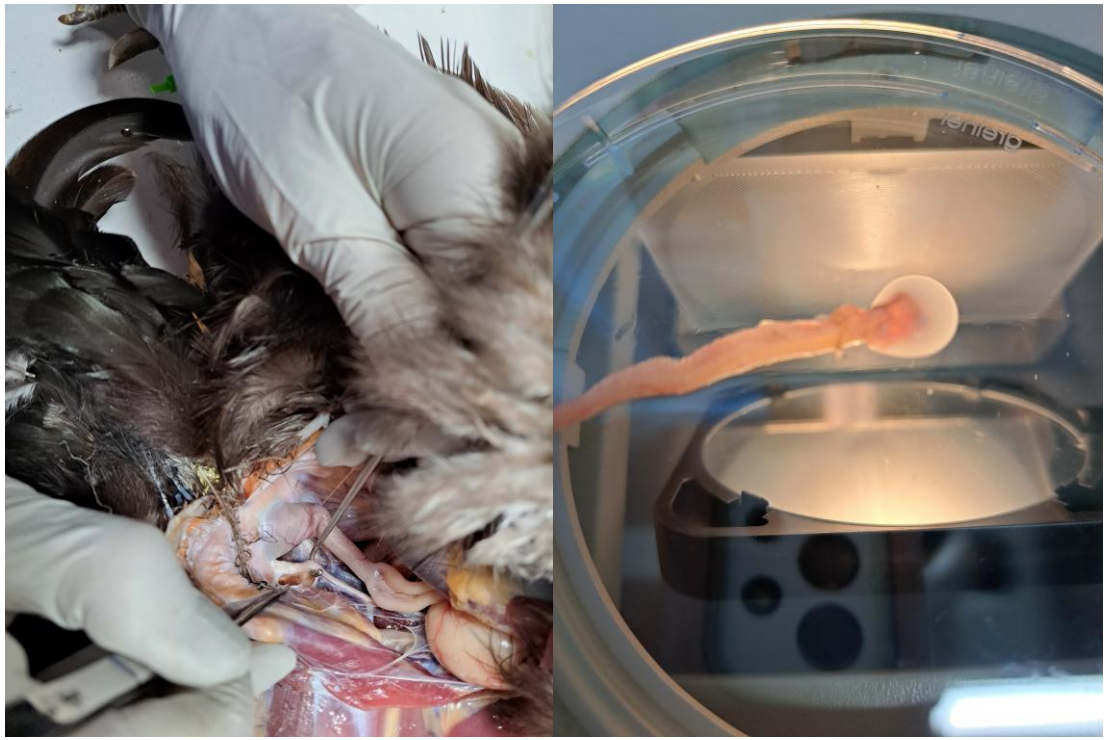
Post-thaw (AI dose => 5 straws)



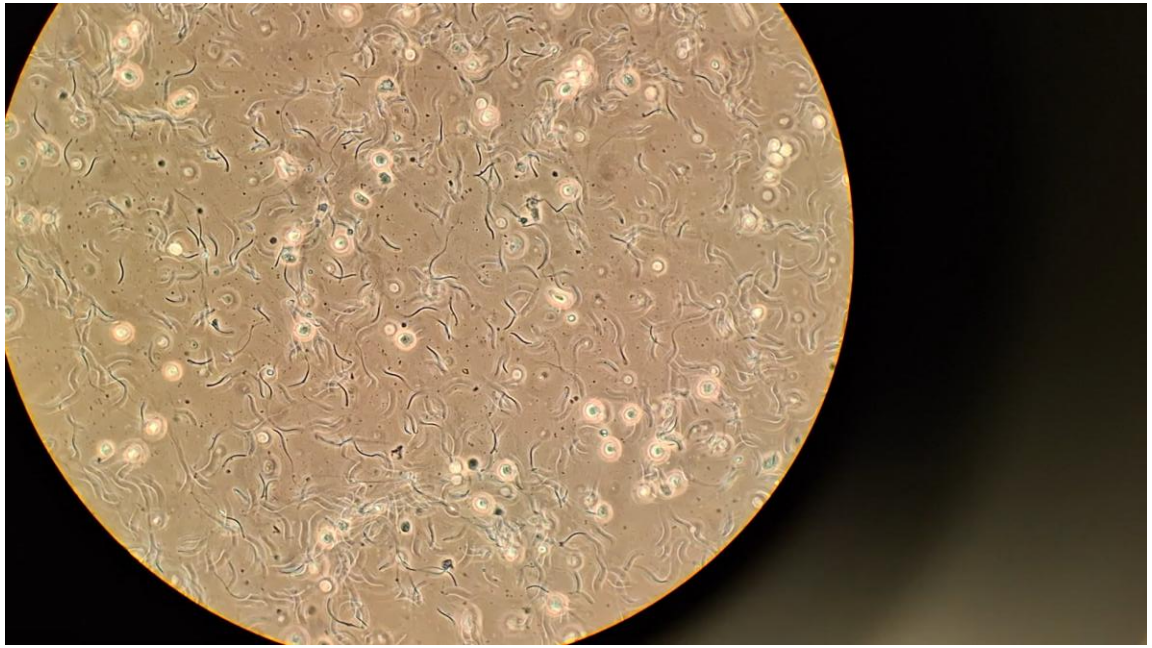
In poultry

Roosters

Epididymis



Post-thaw



Related research projects

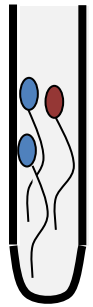
A new era in small ruminant breeding (2026-28)

Luke
ProAgria
Economic Development Centre
Co-funded by the European Union

♂

Selection of Rams and bucks

Epididymal sperm collection and cryopreservation



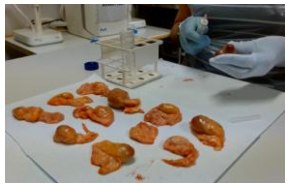
Gene bank -196°C

Artificial inseminations

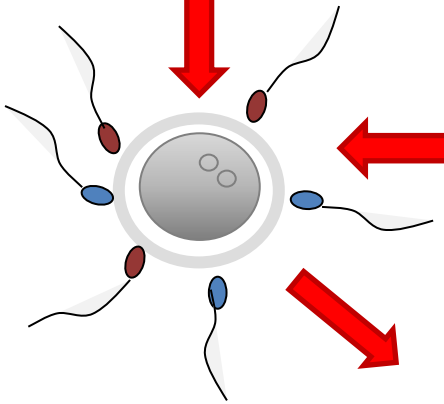
Offspring

♀

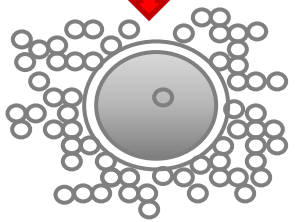
Ovary collection from slaughterhouse

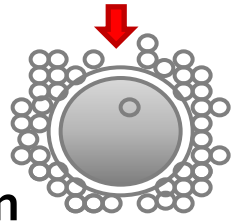


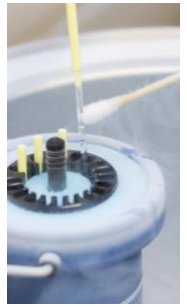
IVF with epididymal sperm



IVM

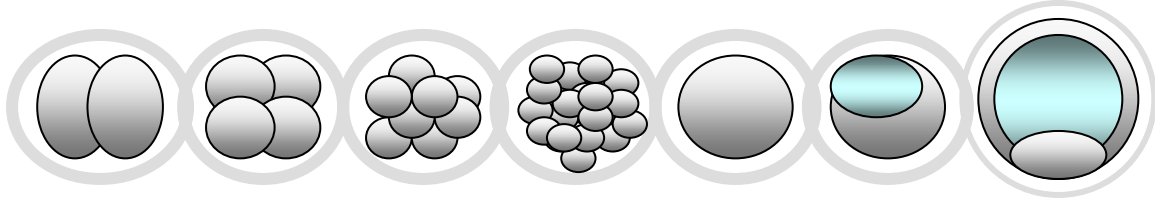






Cryopreservation

IVC => transferable embryos



Artificial inseminations

IVP and cryopreservation of embryos

One plan approach to increasing resilience and long-term viability of the endemic wild forest reindeer in a changing environment LIFE24-NAT-FI-LIFELine4Fennicus (2026-32)

Luke

Co-funded by the European Union

ERÄLUVAT.FI

- **Metsähallitus Eräpalvelut coordinates, partners include Luke, Korkeasaaren zoo, Ranua zoo, Lumimuutos osuuskunta**

Total budget 9,55 million euros
- **EU LIFE 60 %**
- **Partners 24 %**
- **Ministry of agriculture and forestry 15 %**
- **Environmental ministry**
- **Rewilding Europe's Wildlife Comeback Fund**
- **Raija and Ossi Tuuliainen Foundation**

=>The aim is to improve the vitality of the wild forest reindeer population in long term

METSÄHALLITUS
FORSTSTYRELSEN
MEAHCIRÁÐÐEHUS

Kuva: Milla Niemi

LIFELine4Fennicus

WP5.2 Development and implementation of assisted Reproductive technologies in WFR

- Responsible partner: Luke
- Collaborators: Korkeasaari, Ranua, Metsähallitus

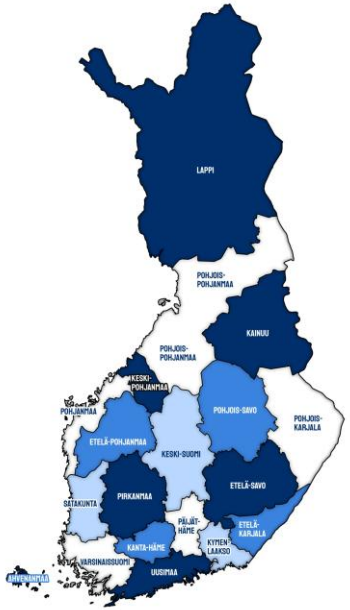
➢ Epididymal sperm collections
➢ Oocyte collections
➢ Artificial inseminations
➢ *In vitro* embryo production

WP5.3 Development and utilisation of a genome resource bank

- Responsible partner: Luke
- Collaborators: Korkeasaari, Ranua, Metsähallitus

➢ Biobanking of germ cells and embryos some of which are being used in WP5.2 (Dynamic gene bank)
➢ Management of the gene bank after the project period

Luke

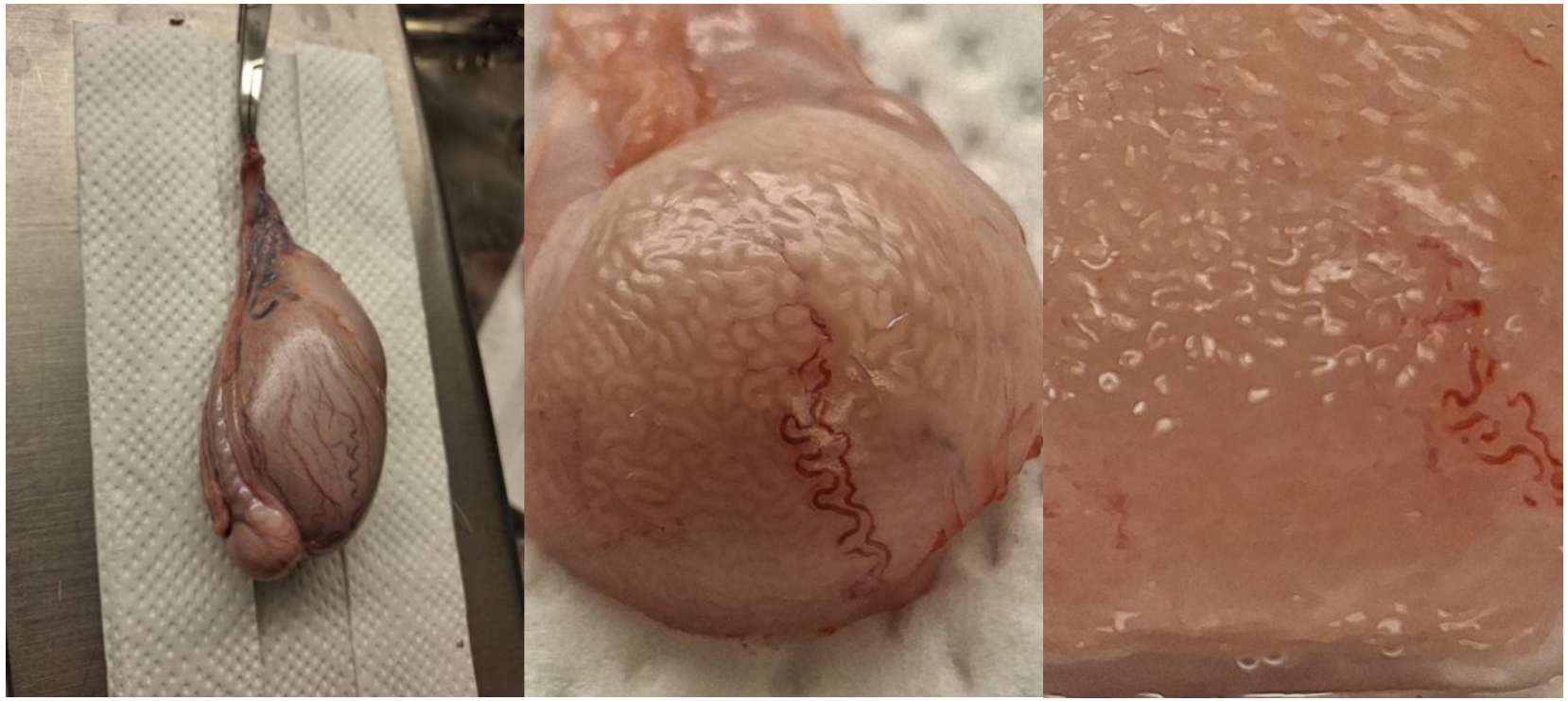


Wild forest reindeer

Photo: Pekka Hautamäki

Living in the wild!

Wild Forest Reindeer: 6 bulls (24, 10 & 7 AI doses)



HS 31.1.2026

Who are we?

Natural Resources Institute Finland (Luke):

- Professor, PhD **Juha Kantanen**: Finnish national coordinator of AnGR, genomics
- Principal Scientist, PhD **Jaana Peippo**: PI of Biobanking at Luke, ARTs, genomics
- Senior Scientist, DVM, PhD **Heli Lindeberg**: ARTs, reproductive physiology
- Researcher, MSc **Petra Tuunainen**: PhD student (poultry)
- Technical expert, MSc **Mervi Mutikainen**: ARTs
- Technical expert **Tuula-Marjatta Hamama**: ARTs, genomics
- Visiting scientist DVM **Paulina Pyrek:** PhD student at NMBU (vitrification of bovine oocytes)

Luke