

1. Institution

Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Sciences (EMÜ), Kreutzwaldi 62, 51014 Tartu, Estonia

2. Principal investigator and contact person

Ülle Jaakma, PhD, ulle.jaakma@emu.ee

3. Key personnel

NAME	EMAIL	RESEARCH AREA DETAILS
Senior scientists		
Ülle Jaakma, professor	ulle.jaakma@emu.ee	Bovine embryo quality, IVF, cloning
Madis Aidnik, professor	madis.aidnik@emu.ee	Equine reproduction
Mihkel Jalakas, professor	mihkel.jalakas@emu.ee	Pathology of reproduction, functional anatomy
Kalle Kask, professor	kalle.kask@emu.ee	physiology of post-partum cow, diseases of reproductive organs
Andres Valdmann, professor	andres.valdmann@emu.ee	Reproductive endocrinology, ovarian function, embryonic mortality
Sulev Kõks, professor	sulev.koks@emu.ee ; sulev.koks@ut.ee	Transcriptomics, genomics
Jevgeni Kurykin, senior researcher	jevgeni.kurykin@emu.ee	Embryo transfer, pathology of reproduction
Triin Hallap, researcher	triin.hallap@emu.ee	Semen quality, flow cytometric analysis of sperm functional characteristics
Ants Kavak, lecturer	ants.kavak@emu.ee	Equine reproduction, embryo transfer in mare
Junior staff		
Pille Pärn	pille.parn@emu.ee	IVF, DNA analysis, cell culture, transgenesis
Aili Sarapik	aali.sarapik@emu.ee	Transcriptomics, reproductive immunology
Mario Plaas	mario.plaas@ut.ee	Cloning and transgenesis (bovine, mice)
PhD-students		
Peeter Padrik	must@estpak.ee	Bull fertility, semen quality
Gret-Kristel Mällo	gret.mallo@emu.ee	Dairy cow fertility, ovarian function
Julia Jeremejeva	julia.jeremejeva@emu.ee	Physiology of post-partum cow
Esta-Laine Nahkur	esta.nahkur@emu.ee	Functional anatomy (anatomy of pelvis)
Ulvi Martin	ulvi@equigyn.ee	Equine reproduction (AI, freezing of semen, gynaecology)
Mari Padari	mari.padari@emu.ee	Functional anatomy

4. Research profile

Currently we have two main research directions: physiology & pathology of large animal reproduction and biotechnology of reproduction. We are focused on factors influencing fertility and infertility in cow and mare, special attention is paid to the problems of ovarian function, luteal function and embryonic mortality in dairy cows in high input environments, gamete quality and interactions with reproductive tract, diagnostics and treatment of reproductive disorders.

There is a particular interest to embryogenomics and epigenetic mechanisms of early development in mammals, as well as endometrial receptivity and implantation. One of the areas of interest in this regard, is the analysis of development of nuclear transfer (NT) embryos compared to normal IVF and in vivo produced embryos, using techniques of cell culture, histology, genomics and transcriptomics.

We study also possibilities for creation of large transgenic animals and the efficacy of using sexed semen.

5. Key technologies and tools

In vivo and vitro embryo production, somatic cell nuclear transfer, transgenesis, hormone analysis, immunoanalysis, cell culture, genomics, transcriptomics, sperm analysis.
Facilities for the animal experiments, IVF, cell culture, hormone analysis, histological examination.
Light microscopy, fluorescence microscopy, transmission and scanning electron microscopy, micromanipulation and microinjection equipment, PCR, RT-PCR, computer-assisted sperm analysis.

6. Selected publications (max. 5)

Samarütel, J.; Ling, K.; Waldmann, A.; Jaakson, H.; Kaart, T.; Leesmäe, A. (2008). Field Trial on Progesterone Cycles, Metabolic Profiles, Body Condition Score and their Relation to Fertility in Estonian Holstein Dairy Cows. *Reproduction in Domestic Animals*, 43, 457-463.

S. Kõks, C. Fernandes, K. Kurrikoff, E. Vasar, L.C. Schalkwyk "Gene expression profiling reveals upregulation of Tlr4 receptors in Cckb receptor deficient mice", *Behavioural Brain Research*, 2008, 188(1):62-70.

Kurykin, J.; Jaakma, U.; Jalakas, M.; Aidnik, M.; Waldmann, A.; Majas, L. (2007). Pregnancy percentage following deposition of sex-sorted sperm at different sites within the uterus in estrus-synchronized heifers. *Theriogenology*, 67(4), 754 - 759.

Hallap T, Nagy Sz, Jaakma Ü, Johannisson A, Rodriguez-Martinez H. Usefulness of a triple fluorochrome combination Merocyanine 540/Yo-Pro-1/Hoechst 33342 in assessing membrane stability of viable frozen-thawed spermatozoa from Estonian Holstein AI bulls. *Theriogenology*, 65, 6, 2006, 1122-1136

Waldmann A., **Kurykin J.**, Jaakma Ü., Käärt T., Aidnik M., Jalakas M., Majas L., Padrik P. The effects of ovarian function on estrus synchronization with PGF in dairy cows. *Theriogenology* 2006;63:1364-1374.