

1. Institution: Utrecht University, Faculty of Veterinary Medicine, Department of Equine Sciences

2. Principal investigator and contact person: Tom A.E. Stout

3. Key personnel

NAME	EMAIL	RESEARCH AREA DETAILS
Tom Stout	t.a.e.stout@uu.nl	Equine gametes, fertilization, maternal recognition of pregnancy, assisted breeding techniques Elephant assisted breeding and contraception
Edita Sostaric	e.sostaric@uu.nl	Stallion semen quality and fertility, including sperm membrane proteins, prostasomes and epididymosomes
Marta Villani	m.villani@uu.nl	Equine maternal recognition of pregnancy and control of luteolysis
Damien Paris (collaboration with Bernard Roelen)	d.b.b.p.paris@uu.nl	Equine embryonic cell differentiation and aspects of cell pluripotency
Karin Hendriks	w.k.hendriks@uu.nl	Equine embryo and oocyte quality including effects of cryopreservation
Monique Paris- Wolvekamp	m.paris@uu.nl	Assisted breeding and conservation of endangered African Wildlife

4. Research profile

Mission Statement

This reproduction research program in Utrecht aims to examine mechanisms involved in gamete development, fertilization and embryogenesis, and how their disruption can lead to sub-fertility in domestic animal species. The ultimate aims are:

- (1) to develop treatments for sub-fertility
- (2) to improve techniques for germ cell preservation and assisted reproduction
- (3) to develop and refine programs for genetic improvement and improved reproductive performance
- (4) to define the determinants of cellular pluripotency and develop techniques for manipulating cell differentiation

Research Focus

The program will focus on normal and disturbed interaction and signalling between:

- (1) gametes and the epithelia/secretions of the male and female genital tracts - leading to gamete maturation and preparation for fertilization
- (2) the developing zygote/early embryo and the oviduct and uterus - leading to the establishment of pregnancy
- (3) cells within the embryo - including the control of pluripotency and cell differentiation.

5. Key technologies and tools

- (1) State-of-the-art imaging facilities (e.g. various FACS machines, multi-photon confocal microscopy, atomic force microscope, electron microscopes)
- (2) Recently renovated experimental animal accommodation plus back-up facilities, experience, and know-how for performing *in vivo* studies in ruminants, pigs and horses
- (3) A fully equipped IVF laboratory with years of experience producing ruminant, pig and horse embryos *in vitro* (includes equipment for oocyte/embryo manipulation and injection, cryopreservation etc)
- (4) Experience and facilities for gene expression base studies (PCR, quantitative PCR)

6. Selected publications (max. 5)

Tremoleda JL, Stout TAE, Lagutina I, Lazzari G, Bevers MM, Colenbrander B, Galli C (2003) Effects of In Vitro Production on Horse Embryo Morphology, Cytoskeletal Characteristics, and Blastocyst Capsule Formation. *Biol. Reprod.* **69**: 1895-1906

Tharasanit T, Colenbrander B and Stout TAE (2005) Effect of cryopreservation on the cellular integrity of equine embryos. *Reproduction* **129**: 789-798

Rambags BPB, Krijtenburg PJ, Drie HF, Lazzari G, Galli C, Pearson PL, Colenbrander B and Stout TAE (2005) Numerical chromosomal abnormalities in equine embryos produced in vivo and in vitro. *Mol. Reprod. Dev.* **72**: 77-87

Tharasanit T, Colleoni S, Lazzari G, Colenbrander B, Galli C, Stout TAE (2006) Effect of cumulus morphology and maturation stage on the cryopreservability of equine oocytes *Reproduction* **132**: 759-769

Sostaric E, Aalberts M, Gadella B, Stout TA (2008) The roles of the epididymis and prostasomes in the attainment of fertilizing capacity by stallion sperm. *Anim. Reprod. Sci.* **107**, 237 - 248