

1. Institution

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2. Principal investigator and contact person

Cesare Galli, DVM (cesare.galli2@unibo.it) tel +39 0372 437242

3. Key personnel

Mari Gaetano	gaetano.mari@unibo.it	Embryology, Assisted reproduction male gametes, cryopreservation, semen sexing
Merlo Barbara	barbara.merlo@unibo.it	Embryo culture, female gametes Immunohistochemistry, cells culture
Brunetti Dario	dariobrunetti@lrciz.it	Cells culture, cells transfection, animals synchronization for embryo transplantation

4. Research profile

Biotechnology of reproduction in farm animals, basic and applied research in molecular embryology with particular emphasis on in vitro oocyte maturation for the identification of the more appropriate media for the competent maturation of bovine, horse, pig and sheep oocyte, oocyte cryopreservation, in vitro fertilisation in particular to reduce the polyspermic fertilisation in pig IVF, sperm injection in equine species where conventional IVF is not successful, embryo culture to improve the quality of the developing embryos to increase the cryotolerance and implantation. Semen sexing by flow cytometry.

Somatic nuclear transfer in farm animals as way to reproduce desired genotypes, to improve the post implantation survival of nuclear transfer embryos by understanding the reprogramming mechanisms and as a model to understand early embryonic development and differentiation; safety of products derived from cloned animals.

Embryonic and somatic stem cells to develop safe and reliable transgenic models in farm animals and for developing cells from autologous sources for cell therapies in large animal models and to study cell commitment and differentiation.

5. Key technologies and tools

In vitro embryo production. Derivation, in vitro culture and differentiation of stem cells. Somatic cell culture and transfection, transgene expression vectors, gene expression, immunohistochemistry, etc.

6. Selected publications (max. 5)

1. Beaujean N, Taylor JE, McGarry M, Gardner JO, Wilmut I, Loi P, Ptak G, Galli C, Lazzari G, Bird A, Young LE, Meehan RR. The effect of interspecific oocytes on demethylation of sperm DNA. **Proc Natl Acad Sci U S A** 2004;101: 7636-7640.
2. Galli C, Colleoni S, Duchi R, Lagutina I, Lazzari G. Developmental competence of equine oocytes and embryos obtained by in vitro procedures ranging from in vitro maturation and ICSI to embryo culture, cryopreservation and somatic cell nuclear transfer. **Anim Reprod Sci** 2007;98: 39-55.
3. Galli C, Lagutina I, Crotti G, Colleoni S, Turini P, Ponderato N, Duchi R, Lazzari G. Pregnancy: a cloned horse born to its dam twin. **Nature** 2003;424: 635.

4. Loi P, Galli C, Ptak G. Cloning of endangered mammalian species: any progress? **Trends Biotechnol** 2007;25: 195-200.
5. Lombardo A, Genovese P, Beausejour CM, Colleoni S, Lee YL, Kim KA, Ando D, Urnov FD, Galli C, Gregory PD, Holmes MC, Naldini L. Gene editing in human stem cells using zinc finger nucleases and integrase-defective lentiviral vector delivery. **Nat Biotechnol** 2007;25: 1298-1306.