

## Animal oocyte and embryo cryopreservation

R. M. Pereira · C. C. Marques

Received: 15 February 2008 / Accepted: 5 May 2008 / Published online: 22 May 2008  
© Springer Science+Business Media B.V. 2008

**Abstract** Cryopreservation of oocytes and embryos is a crucial step for the widespread and conservation of animal genetic resources. However, oocytes and early embryos are very sensitive to chilling and cryopreservation and although new advances have been achieved in the past few years the perfect protocol has not yet been established. All oocytes and embryos suffer considerable morphological and functional damage during cryopreservation but the extent of the injury as well as differences in survival and developmental rates may be highly variable depending on the species, developmental stage and origin (for example, in vitro produced or in vivo derived, micromanipulated or not). Currently, there are two methods for gamete and embryos cryopreservation: slow freezing and vitrification. We have experienced both techniques but vitrification has become a viable and promising alternative to traditional approaches especially when dealing with in vitro produced or micromanipulated embryos and oocytes. Recently

new strategies based on emerging studies in the field of lipid research have been used to reduce intracellular lipid content in bovine in vitro produced embryos and therefore increase their tolerance to micromanipulation and cryopreservation. The addition of a conjugated isomer of linoleic acid, the *trans*-10, *cis*-12 octadecadienoic acid to embryo culture medium more than twice improved embryo post-thawing viability after micromanipulation and vitrification. Vitrification was also used for the cryopreservation of embryos belonging to the Portuguese Animal Germplasm Bank project presently running at our facilities.

**Keywords** Animal · Cryopreservation · Oocyte · Embryo · Freezing · Vitrification · Cryoinjuries · CLA · Germplasm bank

---

Presented at the International Consensus Meeting “New Horizons in Cell and Tissue Banking” on May 2007 at Vale de Santarém, Portugal.

---

R. M. Pereira (✉) · C. C. Marques  
Departamento de Reprodução Animal, Estação  
Zootécnica Nacional (EZN), 2005-048 Vale de Santarém,  
Portugal  
e-mail: rosalnp@gmail.com

C. C. Marques  
e-mail: nvarandamarques@gmail.com