

PRESS RELEASE

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The paper has made the cover of *Reproduction Fertility and Development*

Scientists generate spermatic cells from endangered species to maintain their genetic diversity

- ◆ They have managed to rescue the genotype of young males that were bound to be genetically lost after road kills
- ◆ The study represents an important step in the conservation of Iberian lynx and Mohor gazelle

Madrid, 22 July 2014. Scientists from the National Museum of Natural Sciences (MNCN-CSIC) have developed a project in which they managed to obtain spermatic cells from testis tissue rescued from young males of endangered species. This research will help to reduce the problems related to inbreeding which are frequently found in species with few remaining individuals such as the Iberian lynx.

The collection and cryopreservation of spermatozoa is a well developed technique that has been used in endangered species, but this is the first time that spermatic cells are recovered from young males that have not reached sexual maturity. The new study has used testicular tissue from individuals of different ages of three endangered species: the Iberian lynx, *Lynx pardinus*, the Cuvier's gazelle, *Gazella cuvieri*, and the Mohor gazelle, *Nanger dama*. The tissue employed belonged to individuals from captive breeding programmes and to males killed on the road.

"Each individual from a species is unique and its death represents the irreversible loss of its genotype" explains Eduardo Roldán, a research scientist from the MNCN. "Among endangered species, this loss has important consequences because of the low number of individuals in natural populations. The collection of gametes from dead males, its storage and use by means of assisted reproductive techniques represents an outstanding aid for their conservation", adds Lucía Arregui who carried out her PhD project at the MNCN.

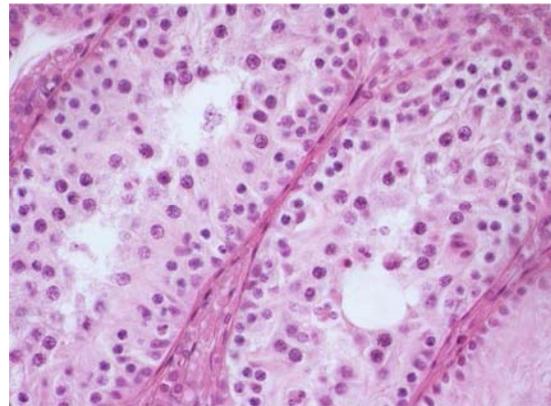


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Above) Testicular tissue from a Mohor gazelle 28 weeks after transplantation to mice.

Left) Cover of the last issue of the journal *Reproduction, Fertility and Development*. Photo of Cuvier's gazelle ©E. Roldan/MNCN.

Eduardo Roldán, who has led the research project, highlights its relevance: "These results represent an important step forward in the conservation of biodiversity because they will help us prevent the undesirable effects of inbreeding and, hence, the loss of genetic diversity, in species with few remaining individuals".

The generation of sperm cells

To achieve the development of spermatogenic cells from young males, scientists from the MNCN have placed small pieces of testicular tissue under the skin of immunodeficient mice. The tissue remains alive because new blood vessels develop and nourish it. Thanks to this technique of xenotransplantation (which is a tissue or organ transplant between different species), a communication between the hypothalamus and pituitary gland of the host mouse and the cells of the transplanted tissue is established which makes the start of spermatogenesis possible. After some time, spermatozoa can be recovered from these testis fragments. "With this technique, we have managed to obtain spermatogenic cells, which will be capable of fertilizing, from testicular tissue from young males, avoiding the loss of their genetic material" concludes Roldán.

Ina Dobrinski, a research scientist at the University of Calgary, has also participated in this study.

L. Arregui, I. Dobrinski, E.R.S. Roldan (2014) Germ cell survival and differentiation after xenotransplantation of testis tissue from three endangered species: Iberian lynx (*Lynx pardinus*), Cuvier's gazelle (*Gazella cuvieri*) and Mohor gazelle (*G. dama mhorr*). *Reproduction, Fertility and Development* 26 (6): 817-826. DOI: <http://dx.doi.org/10.1071/RD12411>.