

AperTO - Archivio Istituzionale Open Access dell'Università di Torino

**X-Y aneuploidy rates in sperm of the Maremmana and Podolian cattle breeds by using dual color fluorescent in situ hybridization (FISH)**

**This is the author's manuscript**

*Original Citation:*

*Availability:*

This version is available <http://hdl.handle.net/2318/1507124> since 2018-03-18T16:33:37Z

*Published version:*

DOI:10.1007/s10577-010-9145-8

*Terms of use:*

Open Access

Anyone can freely access the full text of works made available as "Open Access". Works made available under a Creative Commons license can be used according to the terms and conditions of said license. Use of all other works requires consent of the right holder (author or publisher) if not exempted from copyright protection by the applicable law.

(Article begins on next page)

**This is the author's final version of the contribution published as:**

D. Nicodemo, A. Pauciullo, G. Cosenza, V. Peretti, F. Ciotola, G.P. Di Meo, L. Ramunno, L. Iannuzzi, J. Rubes, D. Di Berardino. X–Yaneuploidy rates in sperm of the Maremmana and Podolian cattle breeds by using dual-color fluorescent in situ hybridization (FISH). *Chromosome Research* (2010) 18:731–732

DOI 10.1007/s10577-010-9145-8

**The publisher's version is available at:**

<https://link.springer.com/article/10.1007%2Fs10577-010-9145-8>

**When citing, please refer to the published version.**

**Link to this full text:**

<https://link.springer.com/article/10.1007%2Fs10577-010-9145-8>

This full text was downloaded from iris-AperTO: <https://iris.unito.it/>

## **X–Yaneuploidy rates in sperm of the Maremmana and Podolian cattle breeds by using dual-color fluorescent in situ hybridization (FISH)**

D. Nicodemo<sup>1</sup>, A. Pauciullo<sup>1</sup>, G. Cosenza<sup>1</sup>, V. Peretti<sup>2</sup>, F. Ciotola<sup>3</sup>, G.P. Di Meo<sup>4</sup>, L. Ramunno<sup>1</sup>, L. Iannuzzi<sup>4</sup>, J. Rubes<sup>5</sup>, D. Di Berardino<sup>1</sup>

<sup>1</sup>Department of Soil, Plant, Environment and Animal Production Sciences, University of Naples “Federico II”, Portici, Italy

<sup>2</sup>Department of Animal Science and Food Inspection, University of Naples “Federico II”, Naples, Italy

<sup>3</sup>Department of Experimental and Clinical Medicine, University Magna Graecia, Catanzaro, Italy

<sup>4</sup>National Research Council (CNR), ISPAAM, Laboratory of Animal Cytogenetics and Gene Mapping, Naples, Italy

<sup>5</sup>Veterinary Research Institute (VRI), Hudcova 70, 62100 Brno, Czech Republic

Sex chromosomes aneuploidies are a common cause of fertility reduction or sterility in domestic animals. While a bulk of papers report about possible environmental and genetic causes of increased incidence of sperm aneuploidy in fertile and infertile man, very few efforts have been directed to characterize the different domestic animal species, breeds and genetic types. The present study aimed to investigate the frequency of X–Y chromosomes aneuploidy in two important Italian autochthonous cattle breeds, the Podolian and Maremmana. Totally, more than 50.000 sperm nuclei from ten subjects (five from each breed) have been FISH analyzed by using Xcen and Y chromosome specific painting probes. Average frequencies of disomic and diploid sperm were 0.150% and 0.032% in the Podolian and 0.099% and 0.102% in the Maremmana. No significant interindividual differences were found. However, significant differences ( $P<0.05$ ) were found among the three different disomy classes in both breeds, while diploidy classes were uniformly represented. In the Podolian breed, disomies were more frequent than diploidies ( $P<0.05$ ), whereas in the Maremmana they showed similar frequencies. In both breeds disomies arising from errors in meiosis I (X–Y disomies) were more represented than those arising in meiosis II (XX and YY), while this difference was not detected for diploidies. The present work contributes to increase the knowledge on the variability in the frequency of sperm aneuploidy in different breeds of cattle, in order to establish a breed specific ‘aneuploidy database’ that could be used as reference for future monitoring of the reproductive health of the breed.