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Obituary (Special thanks)

In memory of Dr. Ryuzo Yanagimachi (Yana) (1928–2023)

Teruhiko WAKAYAMA, Atsuo OGURA

Volume 70 Issue 2 Pages i-iv

DOI <https://doi.org/10.1262/jrd.2024-E01>

Original Article

Identification and characterization of dystrophin-locus-derived testis-specific protein: A testis-specific gene within the intronic region of the rat dystrophin gene

Keitaro YAMANOCHI, Shizuka KATO, Yukie TANAKA, Masanari IKEDA, Yukina OSHIMO, Takanori SHIGA, Kei HATAMOTO, James CHAMBERS, Takuya IMAMURA, Ryuji HIRAMATSU, Kazuyuki UCHIDA, Fuko MATSUDA, Takashi MATSUWAKI, Tetsuya KOHSAKA

Volume 70 Issue 2 Pages 55-64

DOI <https://doi.org/10.1262/jrd.2023-073>

Effect of paternal aging and vitrification on mitochondrial DNA copy number and telomere length of mouse blastocysts

Nao ABURADA, Jun ITO, Yuki INOUE, Taiyo YAMAMOTO, Masamune HAYASHI, Noko TERAMOTO, Yuri OKADA, Yuichi KOSHIISHI, Koumei SHIRASUNA, Hisataka IWATA

Volume 70 Issue 2 Pages 65-71

DOI <https://doi.org/10.1262/jrd.2023-079>

Lipid droplets synthesized during luteinization are degraded after pregnancy

Junichiro MITSUI, Megumi IBAYASHI, Ryutaro AIZAWA, Tomonori ISHIKAWA, Naoyuki MIYASAKA, Satoshi TSUKAMOTO

Volume 70 Issue 2 Pages 72-81

DOI <https://doi.org/10.1262/jrd.2023-095>

Efficient derivation of embryonic stem cells and primordial germ cell-like cells in cattle

Atsushi SHIRASAWA, Masafumi HAYASHI, Mayumi SHONO, Atsushi IDETA, Takashi YOSHINO, Katsuhiko HAYASHI

Volume 70 Issue 2 Pages 82-95

DOI <https://doi.org/10.1262/jrd.2023-087>

Cover Story:

The process of inducing the germ cell lineage from pluripotent stem cells, referred to as in vitro gametogenesis, aids in comprehending the mechanisms involved in germ cell differentiation and offers an alternative source of gametes for reproduction. Shirasawa et al. have developed a novel method for robust induction of primordial germ cell-like cells (PGCLCs) from newly established bovine embryonic stem (bES) cells (Shirasawa et al.: Efficient derivation of embryonic stem cells and primordial germ cell-like cells in cattle, pp. 82–95). After a 24-hour culture with bone morphogenetic protein 4 (BMP4), followed by a three-dimensional culture with BMP4 and chemicals modulating WNT signaling, bES cells exhibited positive expression for a set of primordial germ cell (PGC) markers, including PRDM1/BLIMP1, TFAP2C, and SOX17. These outcomes are anticipated to have practical implications for the development of stem cell-based reproductive technologies in cattle.

Progesterone and estradiol regulate sperm hyperactivation and in vitro fertilization success in mice

Miyu FUJIKURA, Masakatsu FUJINOKI

Volume 70 Issue 2 Pages 96-103

DOI <https://doi.org/10.1262/jrd.2023-080>

Busulfan administration replicated the characteristics of the epididymal initial segment observed in mice lacking testis-epididymis lumicrine signaling

Daiji KIYOZUMI

Volume 70 Issue 2 Pages 104-114

DOI <https://doi.org/10.1262/jrd.2023-102>

Parallel expression patterns of NR4A nuclear receptor family genes in the pituitary gland of proestrus rats

Ryota TERASHIMA, Daiki NAGAO, Masato IKEO, Keisuke MORIOKA, Titaree LAOHARATCHATHANIN, Shiro KURUSU, Mitsumori KAWAMINAMI

Volume 70 Issue 2 Pages 115-122

DOI <https://doi.org/10.1262/jrd.2023-090>

Time elapsed between ovulation and insemination determines the quality of fertilized rat oocytes

Naomi NAKAGATA, Satohiro NAKAO, Nobuyuki MIKODA, Katsuma YAMAGA, Toru TAKEO

Volume 70 Issue 2 Pages 123-130

DOI <https://doi.org/10.1262/jrd.2023-067>

High-concentration bovine serum albumin enhances fertilization ability of cold-stored rat sperm

Katsuma YAMAGA, Satohiro NAKAO, Nobuyuki MIKODA, Jorge Mario SZTEIN, Naomi NAKAGATA, Toru TAKEO

Volume 70 Issue 2 Pages 131-137

DOI <https://doi.org/10.1262/jrd.2023-085>

The fertility of dairy heifers and cows is not influenced by the follicular wave of the ovulatory follicle

Javad MOHAMMADI, Mehdi AZARI, Mojtaba KAFI

Volume 70 Issue 2 Pages 138-143

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Review

Improvements in in vitro spermatogenesis: oxygen concentration, antioxidants, tissue-form design, and space control
Takehiko OGAWA, Takafumi MATSUMURA, Tatsuma YAO, Hiroshi KIMURA, Kiyoshi HASHIMOTO, Yu ISHIKAWA-YAMAUCHI, Takuya SATO

Volume 70 Issue 1 Pages 1-9

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Cover Story:

For the past century, achieving in vitro spermatogenesis has remained a difficult challenge for researchers. In 2011, Ogawa et al. successfully demonstrated in vitro spermatogenesis in mice using an organ culture method. However,

extending this method to other species posed challenges for over a decade. In 2023, Ogawa's team achieved in vitro spermatogenesis in rats by incorporating several critical modifications to enhance their original technique. This review presents a detailed analysis by Ogawa et al. comparing their method with natural in vivo conditions and other synthetic alternatives (Ogawa et al. Improvements in in vitro spermatogenesis: oxygen concentration, antioxidants, tissue-form design, and space control, pp. 1–9). They systematically explore the merits, limitations, and inherent constraints of the organ culture approach, delving into the specifics of medium composition, the principles of the gas-liquid interphase method, use of microfluidic devices, and innovation of the PDMS-ceiling method. Highlighting the challenges faced, including regulating oxygen concentration, managing tissue formation, and regulating culture space-control. The insights and novel concepts shared in this review are particularly valuable for those involved in culture or related disciplines, providing innovative content, and encouraging further exploration in this field.

Original Article

PABPN1L is required for maternal mRNA degradation after meiosis resumption

Chihiro EMORI, Mayo KODANI, Ferheen ABBASI, Masashi MORI, Masahito IKAWA

Volume 70 Issue 1 Pages 10-17

DOI <https://doi.org/10.1262/jrd.2023-077>

Lipid droplet formation is spatiotemporally regulated in oocytes during follicular development in mice

Ryutaro AIZAWA, Megumi IBAYASHI, Junichiro MITSUI, Satoshi TSUKAMOTO

Volume 70 Issue 1 Pages 18-24

DOI <https://doi.org/10.1262/jrd.2023-055>

Development of a fluorometric Cuboni test for the semi-quantitative measurement of urinary estrogen levels and pregnancy detection in mares

Kaede ODA, Maya YOSHIDA, Abdul Razaq IRSHAD, Tomomi KANAZAWA, Toru TAKAHASHI

Volume 70 Issue 1 Pages 25-29

DOI <https://doi.org/10.1262/jrd.2023-083>

Equine chorionic gonadotropin treatment and timed artificial insemination for dairy cow production under heat stress

Daisuke FUNAKOSHI, Hidetoshi SHIOTANI, Makoto SEKI

Volume 70 Issue 1 Pages 30-34

DOI <https://doi.org/10.1262/jrd.2023-069>

Negative photoperiod induces an increase in the number of ovulations in dairy cattle

Fernando LÓPEZ-GATIUS

Volume 70 Issue 1 Pages 35-41

DOI <https://doi.org/10.1262/jrd.2023-075>

Serum-free spontaneously immortalized bovine oviduct epithelial cell conditioned medium promotes the early development of bovine in vitro fertilized embryos

Norikazu MIYASHITA, Satoshi AKAGI, Tamas SOMFAI, Yuji HIRAO

Volume 70 Issue 1 Pages 42-48

DOI <https://doi.org/10.1262/jrd.2023-031>

Technology Report

Capturing temperature changes on the ocular surface along with estrus and ovulation using infrared thermography in Japanese Black cows

Riho OZAKI, Seiji INOUE, Yuki YOROZUI, Rei ICHIKAWA, Naoki YAMADA, Seiya HIGASHI, Shuichi MATSUYAMA, Hiroko TSUKAMURA, Satoshi OHKURA, Yoshihisa UENOYAMA, Yasuhiro MORITA

Volume 70 Issue 1 Pages 49-54

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