

BIOLOGY *of* REPRODUCTION

Official Journal of the Society for
the Study of Reproduction

August 2013

VOLUME 89 NUMBER 2

WORLD OF REPRODUCTIVE BIOLOGY
Charlotte Schubert, Ph.D., Science Writer



Article 22

Editorial

What's in a Word? Article 45
Bernard Robaire
Editorial preface to the following debate minireviews from Martine Culty and John McCarrey.

Commentary

Survival of Drowning Sperm: Do Spermatozoa from External Fertilizers Adapt to Differing Osmotic Environments Through the Use of Aquaporins? Article 36
Gary N. Cherr
In this issue of *Biology of Reproduction*, Chauvigne and colleagues show that multiple aquaporins are associated with water and fluid homeostasis during spermatogenesis and in the male reproductive tract, as well as in mature motile spermatozoa.

Minireview

Gonocytes, from the Fifties to the Present: Is There a Reason to Change the Name? Article 46
Martine Culty
A case for maintaining the gonocyte terminology.

Toward a More Precise and Informative Nomenclature Describing Fetal and Neonatal Male Germ Cells in Rodents Article 47
John R. McCarrey
A case for updating the terminology of male germ cells during the fetal and neonatal stages in male rodents.

Embryo

Temporal and Developmental-Stage Variation in the Occurrence of Mitotic Errors in Trippronuclear Human Preimplantation Embryos Article 42
Eleni Mantikou, Jannie van Echten-Arends, Birgit Sikkema-Raddatz, Fulco van der Veen, Sjoerd Repping, and Sebastiaan Mastenbroek
Studying developmental and temporal incidents of mitotic errors will aid evaluation of mosaicism on preimplantation genetic screening (PGS), help determine the optimal developmental stage during which to perform PGS, and may prevent these errors and increase overall embryo quality and success rates in ART.

Female Reproductive Tract

Intrauterine Inhibition of Prostaglandin Transporter Protein Blocks Release of Luteolytic PGF2alpha Pulses Without Suppressing Endometrial Expression of Estradiol or Oxytocin Receptor in Ruminants Article 27
JeHoon Lee, John A. McCracken, Sakhila K. Banu, and Joe A. Arosh
Intrauterine inhibition of prostaglandin transporter inhibits pulsatile release of PGF2alpha from the ovine endometrium, indicating that the prostaglandin transporter protein is a final component of the luteolytic machinery in ruminants.

Broad Gap Junction Blocker Carbenoxolone Disrupts Uterine Preparation for Embryo Implantation in Mice Article 31
Honglu Diao, Shuo Xiao, Elizabeth W. Howerth, Fei Zhao, Rong Li, Mary B. Ard, and Xiaoqin Ye
Broad gap junction blocker carbenoxolone suppresses uterine molecular changes and ultrastructural transformations associated with preparation for embryo implantation and disrupts implantation.

Hamster Oviductin Regulates Tyrosine Phosphorylation of Sperm Proteins During In Vitro Capacitation ... Article 38
Laurelle Saccary, Yi-Min She, Richard Oko, and Frederick W.K. Kan
Hamster oviductin, isolated and purified from the estrus stage of the estrous cycle, regulates tyrosine phosphorylation of sperm proteins during in vitro capacitation.

Gamete Biology

- Regulation of Glucose Phosphate Isomerase by the 3'UTR-Specific miRNAs miR-302b and miR-17-5p in Chicken Primordial Germ Cells** Article 33

Deivendran Rengaraj, Tae Sub Park, Sang In Lee, Bo Ram Lee, Beom Ku Han, Gwonhwa Song, and Jae Yong Han

The expression of the glucose phosphate isomerase gene is highly regulated by its targeting microRNAs in chicken primordial germ cells.

- A Requirement for Fatty Acid Oxidation in the Hormone-Induced Meiotic Maturation of Mouse Oocytes** Article 43

Deepa Valsangkar and Stephen M. Downs

Hormone-induced meiotic resumption in mouse oocytes requires PRKA-dependent stimulation of fatty acid oxidation.

- Prophase I Mouse Oocytes Are Deficient in the Ability to Respond to Fertilization by Decreasing Membrane Receptivity to Sperm and Establishing a Membrane Block to Polyspermy** Article 44

Cassie A. Kryzak, Maia M. Moraine, Diane D. Kyle, Hyo J. Lee, Caelin Cubeñas-Potts, Douglas N. Robinson, and Janice P. Evans

The postfertilization reduction in the ability of the egg membrane to support sperm binding is less robust and slower to develop in fertilized prophase I oocytes as compared to metaphase II eggs, and this is correlated with abnormal postfertilization cytoskeletal remodeling.

Male Reproductive Tract

- Epididymosomes Convey Different Repertoires of MicroRNAs Throughout the Bovine Epididymis** Article 30

Clémence Belleannée, Ézequiel Calvo, Julieta Caballero, and Robert Sullivan

Extracellular vesicles released from caput and cauda epididymidis transport different populations of miRNAs and associate with recipient epithelial cells.

- The Role of Fibroblast Growth Factor Receptor Substrate 2 (FRS2) in the Regulation of Two Activity Levels of the Components of the Extracellular Signal-Regulated Kinase (ERK) Pathway in the Mouse Epididymis** Article 48

Bingfang Xu, Ling Yang, and Barry T. Hinton

Conditional knockout mouse models show that FRS2 has different roles in the regulation of two distinct activity levels of the ERK pathway components in the epididymal epithelium.

Mechanisms of Hormone Action

- Identification of *Ube2b* as a Novel Target of Androgen Receptor in Mouse Sertoli Cells** Article 32

Lisha Mou, Qiaoxia Zhang, Yadong Wang, Qiang Zhang, Liang Sun, Cailing Li, Weiren Huang, Yongxian Yuan, Yonggang Duan, Ruiying Diao, Zhimao Jiang, Jiongxian Ye, Zhiming Cai, and Yaoting Gui

The androgen receptor directly upregulates *Ube2b* gene expression via the potential ARE element.

- Effects of Ovarian Hormones on Internal Circadian Organization in Rats** Article 35

Zachary C. Murphy, Pinar Pezuk, Michael Menaker, and Michael T. Sellix

The timing of circadian gene expression in the brain and periphery is affected by estrous cycle stage and ovarian-steroid hormone depletion following ovariectomy.

Neuroendocrinology

- Dorsomedial Hypothalamic Lesions Block Syrian Hamster Testicular Regression in Short Day Lengths Without Diminishing Increased Testosterone Negative-Feedback Sensitivity** Article 23

Stephan G. Jarjisian, David J. Piekarski, Ned J. Place, Joseph R. Driscoll, Eve G. Paxton, Lance J. Kriegsfeld, and Irving Zucker

Ablation of the hypothalamic dorsomedial nucleus prevents testicular regression in short day lengths, but not by eliminating increased negative-feedback sensitivity to testosterone.

Ovary

- Mouse *HORMAD1* Is a Meiosis I Checkpoint Protein That Modulates DNA Double-Strand Break Repair During Female Meiosis** Article 29

Yong-Hyun Shin, Megan M. McGuire, and Aleksandar Rajkovic

HORMAD1, a synaptonemal complex protein, is a critical component of the meiosis I surveillance and monitors DNA double-strand break repair.

The Canonical WNT2 Pathway and FSH Interact to Regulate Gap Junction Assembly in Mouse Granulosa Cells	Article 39
<i>Hong-Xing Wang, Carolina Gillio-Meina, Shuli Chen, Xiang-Qun Gong, Tony Y. Li, Donglin Bai, and Gerald M. Kidder</i>	
The canonical WNT2 signaling pathway regulates follicle growth at least in part by maintaining gap junctional communication within the granulosa cells.	
Pregnancy	
The Unique Expression and Function of miR-424 in Human Placental Trophoblasts	Article 25
<i>Jean-Francois Mouillet, Rogier B. Donker, Takuya Mishima, Tina Cronqvist, Tianjiao Chu, and Yoel Sadovsky</i>	
MicroRNA-424 expression is associated with differentiation of human placental trophoblasts.	
Uterine Infusion of Melatonin or Melatonin Receptor Antagonist Alters Ovine Feto-Placental Hemodynamics During Midgestation	Article 40
<i>Caleb O. Lemley, Leticia E. Camacho, and Kimberly A. Vonnahme</i>	
Uterine infusion of the melatonin receptor antagonist luzindole decreases feto-placental blood flow and placental efficiency in sheep.	
Reproductive Technology	
Mouse Cloning Using a Drop of Peripheral Blood	Article 24
<i>Satoshi Kamimura, Kimiko Inoue, Narumi Ogonuki, Michiko Hirose, Mami Oikawa, Masahiro Yo, Osamu Ohara, Hiroyuki Miyoshi, and Atsuo Ogura</i>	
Leukocytes freshly collected from a drop of peripheral blood were used as nuclear donor cells to generate cloned mice.	
Rescue of Vitrified-Warmed Bovine Oocytes with Rho-Associated Coiled-Coil Kinase Inhibitor	Article 26
<i>In-Sul Hwang, Hiromasa Hara, Hak-Jae Chung, Masumi Hirabayashi, and Shinichi Hochi</i>	
Inhibition of ROCK activity in vitrified-warmed bovine oocytes can lead to higher developmental competence into blastocysts due to decreased apoptosis and normalized function of microtubule-organizing center.	
Characteristics of Bovine Inner Cell Mass-Derived Cell Lines and Their Fate in Chimeric Conceptuses . . .	Article 28
<i>Tadashi Furusawa, Katsuhiro Ohkoshi, Koji Kimura, Shuichi Matsuyama, Satoshi Akagi, Masahiro Kaneda, Mitsumi Ikeda, Misa Hosoe, Keiichiro Kizaki, and Tomoyuki Tokunaga</i>	
Novel bovine inner cell mass-derived cell lines were established using GSK3 and MEK inhibitors; these cell lines exhibit the features of both naive and primed pluripotent stem cells and can differentiate into both fetal and extraembryonic tissues.	
Fundamental Studies of the Reproductive Biology of the Endangered Persian Onager (<i>Equus hemionus onager</i>) Result in First Wild Equid Offspring from Artificial Insemination	Article 41
<i>Mandi W. Schook, David E. Wildt, Rachael B. Weiss, Barbara A. Wolfe, Kate E. Archibald, and Budhan S. Pukazhenti</i>	
Understanding the fundamental reproductive biology of the Persian onager allowed the production of foals by artificial insemination, including with thawed spermatozoa.	
Testis	
SOX9 Regulates MicroRNA <i>miR-202-5p/3p</i> Expression During Mouse Testis Differentiation	Article 34
<i>Elanor N. Wainwright, Joan S. Jorgensen, Youngha Kim, Vy Truong, Stefan Bagheri-Fam, Tara Davidson, Terje Svingen, Selene L. Fernandez-Valverde, Kathryn S. McClelland, Ryan J. Taft, Vincent R. Harley, Peter Koopman, and Dagmar Wilhelm</i>	
The microRNAs <i>miR-202-5p/3p</i> are testis-enriched, expressed during mouse gonad development, and are regulated by the male-determining factor SOX9.	
Subcellular Localization of Selectively Permeable Aquaporins in the Male Germ Line of a Marine Teleost Reveals Spatial Redistribution in Activated Spermatozoa	Article 37
<i>François Chauvigné, Mónica Boj, Sebastiano Vilella, Roderick Nigel Finn, and Joan Cerdà</i>	
Up to seven classes of aquaporins are differentially expressed during spermatogenesis in a marine teleost, with several paralogs being spatially redistributed in the plasma membrane upon seawater activation of sperm motility.	