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Charlotte Schubert, Ph.D., Science Writer



Article 53

Commentary

Human Implantation: A Tale of Mutual Maternal and Fetal Attraction

Article 81

Siobhan Quenby and Jan J. Brosens

In this issue of *Biology of Reproduction*, Gellersen et al. provide further evidence that embryonic trophoblast and decidualizing endometrial stromal cells establish chemotactic gradients that facilitate mutual migration.

Minireview

Mechanisms of Activin-Stimulated FSH Synthesis: The Story of a Pig and a FOX

Article 78

Daniel J. Bernard and Stella Tran

Recent research has identified FOXL2 as an essential regulator of FSH beta subunit transcription in vitro and in vivo.

Embryo

Inhibition of MAP2K and GSK3 Signaling Promotes Bovine Blastocyst Development and Epiblast-Associated Expression of Pluripotency Factors

Article 74

Daina Harris, Ben Huang, and Björn Oback

Culturing bovine embryos in medium with inhibitors of MAP2K and GSK promotes blastocyst development and pluripotency gene expression.

Female Reproductive Tract

Seminal Plasma Affects Prostaglandin Synthesis and Angiogenesis in the Porcine Uterus

Article 72

Monika M. Kaczmarek, Kamil Krawczynski, and Justyna Filant

Seminal plasma sensitizes endometrial tissue to evoke prolonged effects on prostaglandin synthesis and angiogenesis in the endometrium, preceding maternal recognition of pregnancy in the pig.

Selective Inhibition of Prostaglandin E2 Receptors EP2 and EP4 Inhibits Adhesion of Human Endometrial Epithelial and Stromal Cells Through Suppression of Integrin-Mediated Mechanisms

Article 77

JeHoon Lee, Sakhila K. Banu, Robert C. Burghardt, Anna Starzinski-Powitz, and Joe A. Arosh

Selective inhibition of PGE₂ receptors EP2 and EP4 disassembles integrin linkage mechanisms and disturbs integrin signaling pathways, inhibiting adhesion of human endometrial epithelial and stromal cells to extracellular matrix proteins in a cell- and substrate-specific manner.

Regulation of the PI3-K/Akt Survival Pathway in the Rat Endometrium

Article 79

Annabelle Veillette, Kathy Grenier, Kevin Brasseur, Guylaine Fréchette-Frigon, Valérie Leblanc, Sophie Parent, and Eric Asselin

Akt isoforms are differently regulated in the endometrium during rat pregnancy.

Gamete Biology

Oocytes Isolated from Dairy Cows with Reduced Ovarian Reserve Have a High Frequency of Aneuploidy and Alterations in the Localization of Progesterone Receptor Membrane Component 1 and Aurora Kinase B

Article 58

Alberto Maria Luciano, Federica Franciosi, Valentina Lodde, Irene Tessaro, Davide Corbani, Silvia Clotilde Modina, and John J. Peluso

Alteration in localization of PGRMC1 and AURKB accounts for increased aneuploidy and low developmental competence of oocytes of ovaries isolated from cows with reduced ovarian reserve.

- A Population of CRES Resides in the Outer Dense Fibers of Spermatozoa** Article 65
Marvin Ferrer, Gail Cornwall, and Richard Oko
 A CRES isoform assembles as part of the outer dense fibers (ODF) during the elongation and maturation phases of spermiogenesis and is retained as a covalently bound component of the ODF in spermatozoa.
- Melatonin Prevents Postovulatory Oocyte Aging in the Mouse and Extends the Window for Optimal Fertilization In Vitro** Article 67
Tessa Lord, Brett Nixon, Keith T. Jones, and R. John Aitken
 Addition of the antioxidant melatonin to oocyte culture media delays the onset of apoptosis in postovulatory oocytes, extends the window for fertilization, and improves the quality of blastocysts.
- Suppression of Chemically Induced and Spontaneous Mouse Oocyte Activation by AMP-Activated Protein Kinase** Article 70
Ru Ya and Stephen M. Downs
 AMP-activated protein kinase prevents chemically induced and spontaneous parthenogenetic activation in mouse oocytes during meiotic maturation.

Male Reproductive Tract

- The Tyrosine Phosphatase SHP2 Regulates Sertoli Cell Junction Complexes** Article 59
Pawan Puri and William H. Walker
 The tyrosine phosphatase SHP2 regulates Sertoli cell adhesion via ERK and FAK kinases and the localization of adhesion proteins.
- Lcn5 Promoter Directs the Region-Specific Expression of Cre Recombinase in Caput Epididymidis of Transgenic Mice** Article 71
Shengsong Xie, Juan Xu, Wubin Ma, Qiang Liu, Jinxiang Han, Guangxin Yao, Xingxu Huang, and Yonglian Zhang
 A Lcn5-Cre transgenic mouse model was established to create caput epididymidis-specific knockout mouse models by crossing with mice harboring loxP-flanked (floxed) genes.
- Kisspeptin Receptor, GPR54, as a Candidate for the Regulation of Testicular Activity in the Frog *Rana esculenta*** Article 73
Rosanna Chianese, Vincenza Ciaramella, Silvia Fasano, Riccardo Pierantoni, and Rosaria Meccariello
 Frog testes expresses *GPR54* in an estradiol-dependent manner, and thus kisspeptin/GPR54 may be involved in the regulation of estrogen-dependent testicular function.

Mechanisms of Hormone Action

- Regulation of Cyclin D2 Expression and Degradation by Follicle-Stimulating Hormone During Rat Granulosa Cell Proliferation In Vitro** Article 57
Yingying Han, Guoliang Xia, and Benjamin K. Tsang
 Cyclin D2 is rapidly regulated by FSH during granulosa cell proliferation in vitro through acute increased gene expression and subsequent ubiquitination-proteasomal degradation.
- Gestational Protein Restriction Increases Angiotensin II Production in Rat Lung** Article 64
Haijun Gao, Uma Yallampalli, and Chandra Yallampalli
 Gestational protein restriction increases plasma levels of angiotensin II by stimulating expression and enzymatic activities of ACE in lungs but not kidneys of pregnant rats.

Ovary

- Evidence for a Luteotropic Role of Peroxisome Proliferator-Activated Receptor Gamma: Expression and In Vitro Effects on Enzymatic and Hormonal Activities in Corpora Lutea of Pseudopregnant Rabbits** Article 62
Massimo Zerani, Margherita Maranesi, Gabriele Breccia, Anna Gobbetti, Cristiano Boiti, and Francesco Parillo
 Peroxisome proliferator-activated receptor gamma plays a luteotropic role in pseudopregnant rabbits; it up-regulates 3beta-hydroxysteroid dehydrogenase activity with a consequent increase in progesterone production.

Pregnancy

- AKT Isoforms 1 and 3 Regulate Basal and Epidermal Growth Factor-Stimulated SGHPL-5 Trophoblast Cell Migration in Humans** Article 54
Peter Haslinger, Sandra Haider, Stefan Sonderegger, Jan Velten Otten, Jürgen Pollheimer, Guy Whitley, and Martin Knöfler

Isoforms one and three of protein kinase B/AKT regulate basal and epidermal growth factor-induced migration of trophoblastic SGHPL-5 cells.

Human Endometrial Stromal Cell-Trophoblast Interactions: Mutual Stimulation of Chemotactic Migration and Promigratory Roles of Cell Surface Molecules CD82 and CEACAM1 Article 80

Birgit Gellersen, Anja Wolf, Michelle Kruse, Maren Schwenke, and Ana-Maria Bamberger
CEACAM1 facilitates trophoblast spheroid spreading on decidualizing endometrial stromal cells in an implantation model; CD82 supports migration of decidualizing endometrial stromal cells toward trophoblast HB-EGF and PDGF-AA.

Reproductive Technology

Osmotic Stress and Membrane Phase Changes During Freezing of Stallion Sperm: Mode of Action of Cryoprotective Agents Article 68

Harriette Oldenhof, Marina Gojowsky, Shangping Wang, Samantha Henke, Chaojie Yu, Karl Rohn, Willem F. Wolkers, and Harald Sieme

During cryopreservation of sperm in a mixture of glycerol and HES, glycerol modulates dehydration and stabilizes membranes, whereas HES forms a stable glassy matrix facilitating preservation and handling at higher subzero temperatures.

Massively Parallel Sequencing for Chromosomal Abnormality Testing in Trophectoderm Cells of Human Blastocysts Article 69

XuYang Yin, Ke Tan, Gábor Vajta, Hui Jiang, YueQiu Tan, ChunLei Zhang, Fang Chen, ShengPei Chen, ChunSheng Zhang, XiaoYu Pan, Chun Gong, XuChao Li, ChuYu Lin, Ya Gao, Yu Liang, Xin Yi, Feng Mu, LiJian Zhao, HuanHuan Peng, Bo Xiong, ShuoPing Zhang, DeHua Cheng, GuangXiu Lu, XiuQing Zhang, Ge Lin, and Wei Wang

Massive parallel sequencing (MPS) detects embryonic chromosomal abnormality and provides a clinical application that is flexible, cost-effective, and highly accurate.

In Vitro Fertilization Alters Growth and Expression of *Igf2/H19* and Their Epigenetic Mechanisms in the Liver and Skeletal Muscle of Newborn and Elder Mice Article 75

Fang Le, Li Ya Wang, Ning Wang, Lei Li, Le Jun Li, Ying Ming Zheng, Hang Ying Lou, Xiao Zhen Liu, Xiang Rong Xu, Jian Zhong Sheng, He Feng Huang, and Fan Jin

IVF affects the weight of newborns and long-lasting changes in *Igf2/H19* expression in liver and skeletal muscle, which may be associated with epigenetic mechanisms such as DNA methylation and *miR-483*.

Testis

The Wilms Tumor Gene, *Wt1*, Maintains Testicular Cord Integrity by Regulating the Expression of *Col4a1* and *Col4a2* Article 56

Su-Ren Chen, Min Chen, Xiao-Na Wang, Jun Zhang, Qing Wen, Shao-Yang Ji, Qiao-Song Zheng, Fei Gao, and Yi-Xun Liu

Loss of *Wt1* in Sertoli cells results in the downregulation of basal lamina collagen IV, causing the breakdown of the basal lamina and subsequent disruption of the testicular cord.

A Novel Subcellular Machine Contributes to Basal Junction Remodeling in the Seminiferous Epithelium Article 60

Min Du, J'Nelle Young, Marc De Asis, Jane Cipollone, Calvin Roskelley, Yoshimi Takai, Peter K. Nicholls, Peter G. Stanton, Wanyin Deng, B. Brett Finlay, and A. Wayne Vogl

Tubulobulbar complexes at sites of attachment between neighboring Sertoli cells internalize junctions and develop in primary Sertoli cell cultures.

Efficient Transfection of DNA into Primarily Cultured Rat Sertoli Cells by Electroporation Article 61

Fuping Li, Kohei Yamaguchi, Keisuke Okada, Kei Matsushita, Noritoshi Enatsu, Koji Chiba, Huanxun Yue, and Masato Fujisawa

Square-wave electroporation conditions for transfection of primarily cultured Sertoli cells with plasmid pCMV-GFP are optimized.

Effects of TGFbeta2 on Wild-Type and *Tgfb3* Knockout Mouse Fetal Testis Article 66

Mai A. Sarraj, Ruth M. Escalona, Patrick Western, Jock K. Findlay, and Kaye L. Stenvers

TGFbeta2 treatment partially rescues cord structure but not Leydig cell gene expression in the *Tgfb3* knockout mouse fetal testis.

Meiosis I Arrest Abnormalities Lead to Severe Oligozoospermia in Meiosis 1 Arresting Protein (*M1ap*)-Deficient Mice Article 76

Nelson Alexander Arango, Li Li, Deepa Dabir, Fotini Nicolau, Rafael Pieretti-Vanmarcke, Carla Koehler, John R. McCarrey, Naifang Lu, and Patricia K. Donahoe

Meiosis 1 arresting protein-deficient spermatocytes exhibit faulty synapses and recombination foci formation, leading to pachytene and metaphase I arrest and apoptosis.

Toxicology

Organic Cation Transporter 3 (OCT3/SLC22A3) and Multidrug and Toxin Extrusion 1 (MATE1/SLC47A1) Transporter in the Placenta and Fetal Tissues: Expression Profile and Fetus Protective Role at Different Stages of Gestation

Article 55

Davoud Ahmadimoghaddam, Lenka Zemankova, Petr Nachtigal, Eva Dolezelova, Zuzana Neumanova, Lukas Cerveny, Martina Ceckova, Marian Kacerovský, Stanislav Micuda, and Frantisek Staud

Expression of OCT and MATE transporters in the rat and human placenta changes throughout gestation, affecting placental transport and fetal exposure to organic cations.

Cigarette Smoke Exposure Elicits Increased Autophagy and Dysregulation of Mitochondrial Dynamics in Murine Granulosa Cells

Article 63

Anne Marie Gannon, Martin R. Stämpfli, and Warren G. Foster

Ovarian follicles are lost via increased mitochondrial fission and autophagy-mediated cell death following exposure to cigarette smoke.