

FROM THE EDITORS

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VIEWS AND REVIEWS

4 Introduction: Cancer biomarkers and fertility

J. M. Hotaling, N. Laufer, and Z. Rosenwaks
Salt Lake City, Utah; Jerusalem, Israel; and New York, New York

We discuss the significant data linking infertility as a possible biomarker for cancer in infertile men and the burgeoning data linking them in infertile women.

6 Male infertility: a biomarker of individual and familial cancer risk

B. M. Hanson, M. L. Eisenberg, and J. M. Hotaling
Salt Lake City, Utah; and Stanford, California

Male infertility places men at an increased risk of developing certain types of cancer and may be associated with an increased risk of malignancy in family members as well.

20 Genetic intersection of male infertility and cancer

L. Nagirnaja, K. I. Aston, and D. F. Conrad
St. Louis, Missouri; and Salt Lake City, Utah

Multiple epidemiological studies have identified an association between male factor infertility and increased cancer risk. This article reviews the current literature and discusses potential shared genetic links between the two conditions.

27 Epigenetics, infertility, and cancer: future directions

E. James and T. G. Jenkins
Salt Lake City, Utah

Recent work has revealed a link between fertility and cancer. The study of epigenetics in both male fertility and cancer has the potential to offer intriguing insights in both fields.

33 BRCA mutations and reproduction

H. Daum, T. Peretz, and N. Laufer
Jerusalem, Israel

This review aims to summarize current knowledge about *BRCA* mutations carriers' ovarian reserve, pre-implantation genetic diagnosis, and ovulation induction protocols for in vitro fertilization.

39 p53 and reproduction

H.-J. Kang and Z. Rosenwaks
New York, New York

The *p53* gene is critical to survival and longevity of an individual and could also play a broader role in species survival by facilitating implantation efficiency.

INKLINGS

44 Data sharing requirements: perspectives from three authors

K. T. Barnhart, R. S. Legro, and R. T. Scott Jr.
Philadelphia and Hershey, Pennsylvania; and Basking Ridge, New Jersey

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SEMINAL CONTRIBUTION

- 48 First delivery in a leukemia survivor after transplantation of cryopreserved ovarian tissue, evaluated for leukemia cells contamination**
M. Shapira, H. Raanani, I. Barshack, N. Amariglio, S. Derech-Haim, M. N. Marciano, E. Schiff, R. Orvieto, and D. Meirow
Tel-Aviv, Israel
We discuss the first delivery following an autologous ovarian tissue re-transplantation in a sterile leukemia survivor after evaluation for minimal residual disease.

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G. L. Schattman
New York, New York
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J. M. Goldberg
Cleveland, Ohio
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D. de Ziegler, J. M. Ayoubi, R. Frydman, and R. Fanchin
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C. E. Boots and L. A. Bernardi
Chicago, Illinois
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P. Humaidan, S. G. Kristensen, and K. Coetzee
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- 63 Fraternal twins after elective single-embryo transfers: a lesson in never saying “never”**
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Chesterbrook, Pennsylvania

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Valencia, Spain

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R. F. Savaris
Porto Alegre, Rio Grande do Sul, Brazil

- 68 Is there a common mechanism underlying air pollution exposures and reproductive outcomes noted in epidemiologic and in vitro fertilization lab-based studies?**

S. Mahalingaiah
Boston, Massachusetts

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Z. Blumenfeld
Haifa, Israel

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A. D. Domar
Waltham, Massachusetts

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B. A. Lessey
Greenville, South Carolina

FERTILITY AND STERILITY: 50 YEARS AGO TODAY

- 75 Historical investigations into varicocele pathophysiology and sperm migration**

M. Kathrins
Boston, Massachusetts

ASSISTED REPRODUCTION

77 **Extent of chromosomal mosaicism influences the clinical outcome of in vitro fertilization treatments**

F. Spinella, F. Fiorentino, A. Biricik, S. Bono, A. Ruberti, E. Cotroneo, M. Baldi, E. Cursio, M. G. Minasi, and E. Greco

Rome, Italy

This study demonstrates that mosaic embryos have poorer clinical outcomes compared with euploid embryos and that their developmental potential is influenced by the extent of mosaicism.

84 **Endometrial scratch injury before intrauterine insemination: is it time to re-evaluate its value? Evidence from a systematic review and meta-analysis of randomized controlled trials**

A. Vitagliano, M. Noventa, G. Saccone, S. Gizzo, S. G. Vitale, A. S. Laganà, P. S. Litta, C. Saccardi, G. B. Nardelli, and A. Di Spiezio Sardo

Padua, Naples, and Messina, Italy

Endometrial scratch injury may improve clinical pregnancy rates and ongoing pregnancy rates in intrauterine insemination stimulated cycles without increasing the risk of multiple pregnancy, ectopic pregnancy, or miscarriage.

97 **Effect of the initiation of progesterone supplementation in in vitro fertilization–embryo transfer outcomes: a prospective randomized controlled trial**

J. Gao, F. Gu, B.-Y. Miao, M.-H. Chen, C.-Q. Zhou, and Y.-W. Xu

Guangzhou, People's Republic of China

We discuss the influence of the start point of luteal support on clinical pregnancy rate, implantation rate, and live birth rate of in vitro fertilization and embryo transfer cycles.

104 **Utilization of the Bologna criteria: a promise unfulfilled? A review of published and unpublished/ongoing trials**

A. Boza, S. Y. Oguz, S. Misirlioglu, K. Yakin, and B. Urman

Istanbul, Turkey

There is still reluctance to use the Bologna criteria for the definition of poor response, which makes it difficult to combine data from small studies and reach a meaningful conclusion.

110 **Variables associated with mitochondrial copy number in human blastocysts: what can we learn from trophectoderm biopsies?**

M. J. de los Santos, A. Diez Juan, A. Mifsud, A. Mercader, M. Meseguer, C. Rubio, and A. Pellicer

Valencia, Spain; and Rome, Italy

Understanding the biological meaning of mitochondrial DNA content in human blastocysts and what factors may interfere with their values is essential.

118 **Not all twins are monozygotic after elective single embryo transfer: analysis of 32,600 elective single embryo transfer cycles as reported to the Society for Assisted Reproductive Technology**

M. Vega, S. Zaghi, E. Buyuk, and S. Jindal

Bronx and Hartsdale, New York

Patients undergoing elective single embryo transfer have a 1.7% risk of multiple pregnancies from which 18% can be dizygotic.

123 **Adverse perinatal outcomes associated with crown-rump length discrepancy in in vitro fertilization pregnancies**

K. Cho, C. Dunne, A. Y. K. Albert, and J. C. Havelock

Vancouver and Burnaby, British Columbia, Canada

Small crown-rump length for gestational age was associated with pregnancy loss but was not linked to low birth weight or preterm birth.

EARLY PREGNANCY

- 130** **Difference between mean gestational sac diameter and crown-rump length as a marker of first-trimester pregnancy loss after in vitro fertilization**

J. D. Kapfhamer, S. Palaniappan, K. Summers, K. Kassel, A. C. Mancuso, G. L. Ryan, and D. K. Shah
Iowa City, Iowa; and Philadelphia, Pennsylvania

A small difference between mean gestational sac diameter and crown-rump length is associated with a significantly increased risk of first-trimester pregnancy loss in in vitro fertilization patients.

- 137** **Kisspeptin as a new serum biomarker to discriminate miscarriage from viable intrauterine pregnancy**



C. Sullivan-Pyke, D. J. Haisenleder, S. Senapati, O. Nicolais, E. Eisenberg, M. D. Sammel, and K. T. Barnhart
Philadelphia, Pennsylvania; Charlottesville, Virginia; and Rockville, Maryland

Serum kisspeptin levels are significantly higher in first-trimester ongoing intrauterine pregnancies compared with miscarriages and the nonpregnant state. Kisspeptin may be a potential biomarker to predict pregnancy viability.

ENDOMETRIOSIS

- 142** **Association between surgically diagnosed endometriosis and adverse pregnancy outcomes**

I. Chen, S. Lalani, R.-h. Xie, M. Shen, S. S. Singh, and S.-W. Wen
Ottawa, Ontario, Canada; and Guangdong, People's Republic of China

A large Canadian cohort study suggests that demographic differences exist between pregnant women with and without endometriosis and that the presence of endometriosis is independently associated with an increased risk of placenta previa.

ENVIRONMENT

- 148** **Ambient air pollution and the risk of pregnancy loss: a prospective cohort study**

S. Ha, R. Sundaram, G. M. Buck Louis, C. Nobles, I. Seeni, S. Sherman, and P. Mendola
Bethesda and Rockville, Maryland; and Merced, California

Exposure to fine particulate matter and ozone during pregnancy may increase the risk of pregnancy loss in a prospective pregnancy study with detailed protocols for ovulation and pregnancy testing.

MENTAL HEALTH

- 154** **Quality of life and psychosocial and physical well-being among 1,023 women during their first assisted reproductive technology treatment: secondary outcome to a randomized controlled trial comparing gonadotropin-releasing hormone (GnRH) antagonist and GnRH agonist protocols**

M. Toftager, R. Sylvest, L. Schmidt, J. Bogstad, K. Løssl, L. Prætorius, A. Zedeler, T. Bryndorf, and A. Pinborg
Hvidovre, Copenhagen, Denmark

Women in gonadotropin-releasing hormone (GnRH)-antagonist protocol rated psychosocial and physical well-being during first assisted reproductive technology treatment better than did women in GnRH-agonist protocol. However, the one item on self-reported quality of life was rated similarly.

REPRODUCTIVE SCIENCE

- 165** **Status of nucleolar channel systems in uterine secretions accurately reflects their prevalence—a marker for the window of implantation—in simultaneously obtained endometrial biopsies**

F. Meng, G. Zapantis, S. Z. Williams, H. J. Lieman, E. Buyuk, and U. T. Meier
Bronx and Jericho, New York

Nucleolar channel systems, markers of the endometrial window of implantation, can be detected noninvasively in uterine secretions, and their status reflects their prevalence in biopsies.

REPRODUCTIVE SURGERY

- 172** **Postoperative complications after bowel endometriosis surgery by shaving, disc excision, or segmental resection: a three-arm comparative analysis of 364 consecutive cases**



C. Abo, S. Moatassim, N. Marty, M. Saint Ghislain, E. Huet, V. Bridoux, J. J. Tuech, and H. Roman
Rouen, France

Employing a strategy prioritizing the conservative management of bowel endometriosis, whenever possible, may reduce the risk of severe postoperative complications.

VIDEO

179 Transvaginal natural-orifice transluminal endoscopic surgery: a new approach to myomectomy



J. Baekelandt
Bonheiden, Belgium

Transvaginal natural-orifice transluminal endoscopic surgery provides a new, less invasive approach to myomectomy without abdominal incisions.



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Cover image provided by Jacques Donnez, M.D.: Laparoscopic observation of spontaneous human ovulation. A remarkably prominent vascular pattern was observed on the mature follicle. A small follicular area called the stigma was seen protruding like a reddish bleb from the follicular surface.