



## VIEWS AND REVIEWS

### 1111 Access to fertility care



O. K. Davis and R. Z. Sokol  
*New York, New York; and Los Angeles, California*

Despite impressive advances in the field of reproductive medicine, access to care is a persisting challenge. These articles explore barriers to fertility care and propose a constructive path forward.

### 1113 Access to and use of infertility services in the United States: framing the challenges



E. Y. Adashi and L. A. Dean  
*Providence, Rhode Island*

Improved underwriting of infertility care must constitute a central goal of the professional societies concerned with access to and use of United States infertility and assisted reproduction technology services.

### 1119 Racial and ethnic disparities in assisted reproductive technology access and outcomes



M. Quinn and V. Fujimoto  
*San Francisco, California*

Racial and ethnic disparities exist in rates of fecundity and infertility, access to care, and assisted reproductive technology outcomes.

### 1124 Addressing the emotional barriers to access to reproductive care



C. W. Rich and A. D. Domar  
*Waltham, Massachusetts*

Many infertile individuals do not seek out treatment or drop out of treatment due to the psychological burden of infertility.

### 1128 Limitations and barriers in access to care for male factor infertility



A. Mehta, A. K. Nangia, J. M. Dupree, and J. F. Smith  
*Atlanta, Georgia; Kansas City, Kansas; Ann Arbor, Michigan; and San Francisco, California*

Male infertility is underrepresented as a disease. Acknowledging and addressing the barriers in access to care for male infertility is necessary for improving reproductive care and outcomes in the United States.

### 1138 Can we modify assisted reproductive technology practice to broaden reproductive care access?



R. J. Paulson, B. C. J. M. Fauser, L. T. N. Vuong, and K. Doody  
*Los Angeles, California; Utrecht, the Netherlands; Ho Chi Minh City, Vietnam; and Bedford, Texas*

Access to care may be enhanced by modifying standard assisted reproductive technology practice to make fertility treatment cheaper, simpler, and better tolerated by patients.

*Fertility and Sterility*® (ISSN 0015-0282) is a registered trademark of the American Society for Reproductive Medicine and is published monthly in two volumes by Elsevier Inc., 360 Park Avenue South, New York, NY 10010-1710. Periodicals postage paid at New York, NY and at additional mailing offices. Membership dues to the American Society for Reproductive Medicine include \$50.00 for *Fertility and Sterility*®. Publication of an advertisement or other product mentioned in *Fertility and Sterility* should not be construed as an endorsement of the product or the manufacturer's claim. Statements and opinions expressed in articles and communications herein are those of the authors and not necessarily those of the editors, publisher, or the American Society for Reproductive Medicine or any organizations endorsing this journal. **Subscriptions:** Personal Rates: US\$446.00 (USA), US\$707.00 (Canada), US\$682.00 (all other countries); Students: US\$181.00 (USA and Canada), US\$176.00 (all other countries). Prices include postage and are subject to change without notice. Any enquiry relating to subscriptions should be sent to: **The Americas:** Elsevier Health Sciences Division, Subscription Customer Service, 3251 Riverport Lane, Maryland Heights, MO 63043; Tel: (800) 654-2452 (U.S. and Canada), (314) 447-8871 (outside U.S. and Canada); Fax: (314) 447-8029; E-mail: [journalscustomerservice-usa@elsevier.com](mailto:journalscustomerservice-usa@elsevier.com) (for print support); [journalsonline-support-usa@elsevier.com](mailto:journalsonline-support-usa@elsevier.com) (for online support). **Japan:** Elsevier Inc., Customer Support Department, 9-15 Higashi-Azabu 1-chome, Minato-ku, Tokyo 106-0044, Japan; Tel: (+81) 3 5561-5033; Fax: (+81) 3 5561-5047; e-mail: [info@elsevier.co.jp](mailto:info@elsevier.co.jp). **Asia Pacific (excluding Japan):** Elsevier Inc. (Singapore) Pte Ltd., No. 1 Temasek Avenue, 17-01 Millenia Tower, Singapore 039192; Tel: (+65) 434-3727; Fax: (+65) 337-2230; e-mail: [asiainfo@elsevier.com.sg](mailto:asiainfo@elsevier.com.sg). **Latin America:** Elsevier Inc., Rua Sete de Setembro 111/16 Andar, 20050-002 Centro, Rio de Janeiro - RJ, Brazil; Tel: (+55) (21) 3970 9300; Fax: (+55) (21) 2507 1991; e-mail: [rsola.info@elsevier.com.br](mailto:rsola.info@elsevier.com.br). **South America:** for orders, claims, and help desk information, please contact the Regional Sales Office in Florida as listed above. **Rest of World:** Elsevier Inc., Customer Service Department, P.O. Box 211, 1001 AE Amsterdam, the Netherlands; Tel: (+31) 20-485-3757; Fax: (+31) 20-485-3432; e-mail: [nlinfo-f@elsevier.nl](mailto:nlinfo-f@elsevier.nl). **POSTMASTER:** Send address changes to *Fertility and Sterility*®, Elsevier Health Sciences Division, Subscription Customer Service, 3251 Riverport Lane, Maryland Heights, MO 63043.



## INKLINGS

### 1144 Lightening the burden of care in assisted reproductive technology



D. R. Meldrum  
*La Jolla, California*

## CONCEPTIONS

### 1146 Mosaicism: “survival of the fittest” versus “no embryo left behind”



S. Munné, J. Grifo, and D. Wells  
*Livingston, New Jersey; New York, New York; and Oxford, United Kingdom*

### 1150 The challenge of embryonic mosaicism in preimplantation genetic screening



R. T. Scott Jr. and D. Galliano  
*Basking Ridge, New Jersey; and Rome, Italy*

### 1153 Compensation for egg donation: a zero-sum game



M. J. Bayefsky, A. H. DeCherney, and B. E. Berkman  
*Bethesda, Maryland*

## ASRM PAGES

### e9 Position statement on West Nile virus: a committee opinion



Practice Committees of the American Society for Reproductive Medicine and Society for Assisted Reproductive Technology  
*Birmingham, Alabama*



It is recommended that practitioners defer gamete donors who have confirmed or suspected West Nile virus infections.

### e11 Recommendations for development of an emergency plan for in vitro fertilization programs: a committee opinion



Practice Committees of the American Society for Reproductive Medicine, the Society for Assisted Reproductive Technology, and the Society of Reproductive Biologists and Technologists



*Birmingham, Alabama*

All in vitro fertilization programs and clinics should have plans for the protection of fresh and cryopreserved human tissue and continuation of patient care in the event of an emergency or natural disaster.

### e14 Position on reproductive donors and smallpox vaccine: a committee opinion



Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology  
*Birmingham, Alabama*



The suitability of reproductive donors who have received smallpox vaccine is discussed.

## REFLECTIONS

### 1155 Improving reporting of research reports



R. A. Wild  
*Oklahoma City, Oklahoma*

### 1157 Working memory in women with polycystic ovary syndrome



C. A. Marsh  
*Kansas City, Kansas*

### 1158 Tissue extraction technique at the time of laparoscopic myomectomy



T. Falcone and R. Flyckt  
*Cleveland, Ohio*

## FERTILITY AND STERILITY: 50 YEARS AGO TODAY

### 1160 The relationship between recurrent pregnancy loss and the male contribution



E. C. Feinberg  
*Highland Park, Illinois*

## ORIGINAL ARTICLES

### ANDROLOGY

### 1162 Short-term hypothermic preservation of human testicular tissue: the effect of storage medium and storage period



K. Faes and E. Goossens  
*Brussels, Belgium*

Human testicular tissue can be preserved for 3 days at 4°C in DMEM/F12, without altering tissue morphology, Sertoli cell morphology, number of spermatogonia per area, or number of apoptotic cells.



### 1170 Sequencing of *FTO* and *ALKBH5* in men undergoing infertility work-up identifies an infertility-associated variant and two missense mutations



M. Landfors, S. Nakken, M. Fusser, J.-A. Dahl, A. Klungland, and P. Fedorcsak  
*Oslo, Norway*

Sequencing of the *ALKBH5* and *FTO* genes in patients with male factor infertility identified a genetic variant in the *FTO* gene to be associated with reduced semen quality and two *FTO* missense variants.



### ASSISTED REPRODUCTION

### 1180 Assisted reproductive technology and risk of adverse obstetric outcomes in dichorionic twin pregnancies: a systematic review and meta-analysis



J. B. Qin, H. Wang, X. Sheng, Q. Xie, and S. Gao  
*Hunan, People's Republic of China*

This systematic review and meta-analysis examines whether dichorionic twin pregnancies resulting from assisted reproductive technology have a higher risk of adverse obstetric outcomes compared with those conceived naturally.

### 1193 Women infected with human immunodeficiency virus type 1 have poorer assisted reproduction outcomes: a case-control study



C. Stora, S. Epelboin, E. Devouche, S. Matheron, L. Epelboin, C. Yazbeck, F. Damond, P. Longuet, F. Dzineku, M. Rajguru, L. Delaroche, L. Mandelbrot, D. Luton, and C. Patrat  
*Paris and Colombes, France; Cayenne, French Guiana; and Montréal, Quebec, Canada*

Human immunodeficiency virus 1 infection in women is associated with poorer assisted reproductive technology (ART) outcomes in a match-paired, case-control study, which indicates no ART delay in cases with HIV-1 controlled infection.

### 1202 To delay or not to delay a frozen embryo transfer after a failed fresh embryo transfer attempt?



S. Santos-Ribeiro, J. Siffain, N. P. Polyzos, A. van de Vijver, L. van Landuyt, D. Stoop, H. Tournaye, and C. Blockeel  
*Brussels, Belgium; Lisbon, Portugal; and Aarhus, Denmark*



Frozen embryo transfers performed immediately after fresh in vitro fertilization cycles had clinical pregnancy rates similar to those postponed to a later time. Therefore, deferring frozen embryo transfers may unnecessarily prolong the time to pregnancy.

### 1208 Association of the very early rise of human chorionic gonadotropin with adverse outcomes in singleton pregnancies after in vitro fertilization



C. B. Morse, K. T. Barnhart, S. Senapati, M. D. Sammel, E. C. Prochaska, A. Dokras, C. Chatzicharalampous, and C. Coutifaris  
*Seattle, Washington; and Philadelphia, Pennsylvania*



Slower very early first-trimester human chorionic gonadotropin rise is associated with low birth weight but not gestational age at delivery among singleton in vitro fertilization conceptions.

### 1215 Sequential versus Monophasic Media Impact Trial (SuMMIT): a paired randomized controlled trial comparing a sequential media system to a monophasic medium



M. D. Werner, K. H. Hong, J. M. Franasiak, E. J. Forman, C. V. Reda, T. A. Molinaro, K. M. Upham, and R. T. Scott Jr.  
*Basking Ridge, New Jersey*

This study demonstrates that the usable blastocyst rate is greatest after culture in sequential media in comparison with monophasic; however, no difference exists in timing of blastulation, aneuploidy, or sustained implantation rate.

**1222 Number of biopsied trophoctoderm cells is likely to affect the implantation potential of blastocysts with poor trophoctoderm quality**



S. Zhang, K. Luo, D. Cheng, Y. Tan, C. Lu, H. He, Y. Gu, G. Lu, F. Gong, and G. Lin  
*Changsha, People's Republic of China*



We found that the implantation potential is negatively affected by the biopsied cell number in blastocysts with poor trophoctoderm morphological score.

**1241 Subchorionic hematomas are increased in early pregnancy in women taking low-dose aspirin**



A. Truong, M. M. Sayago, W. H. Kutteh, and R. W. Ke  
*Memphis, Tennessee; and Newport Beach, California*

Our prospective, cohort study demonstrates that the use of aspirin may be associated with an increased risk of developing subchorionic hematomas in early pregnancies.

**1228 Low-dose human chorionic gonadotropin alone can complete follicle maturity: successful application to modified natural cycle in vitro fertilization**



R. J. Paulson, K. Chung, A. M. Quaas, S. J. Mucowski, S. I. Jabara, and K. A. Bendikson  
*Los Angeles, California; Oklahoma City, Oklahoma; and Plano, Texas*

Low-dose human chorionic gonadotropin can be used to complete follicle maturity after gonadotropin-releasing hormone antagonist administration in the late follicular phase of a natural cycle, leading to successful pregnancies in modified natural cycle in vitro fertilization.

**1247 Potential role of circulating microRNAs as a biomarker for unexplained recurrent spontaneous abortion**



W. Qin, Y. Tang, N. Yang, X. Wei, and J. Wu  
*Guangzhou, People's Republic of China*



Four circulating miRNAs (miR-320b, miR-146b-5p, miR-221-3p, miR-559) were up-regulated and one miRNA (miR-101-3p) was down-regulated in unexplained recurrent spontaneous abortion (URSA). These circulating microRNAs may be involved in URSA pathogenesis and provide a promising new diagnostic biomarker for URSA.

**1232 Live birth of twins derived from zona-free oocytes**



Y. Hu and M. P. Trollice  
*Winter Park, Florida*

A 34-year-old woman conceived through in vitro fertilization using autologous zona-free oocytes after intracytoplasmic sperm injection and embryo transfer of morula and blastocyst, resulting in a term twin live birth.

**1255 Growth trend of small uterine fibroids and human chorionic gonadotropin serum levels in early pregnancy: an observational study**



A. Ciavattini, G. Delli Carpini, N. Clemente, L. Moriconi, C. Gentili, and J. Di Giuseppe  
*Ancona, Italy*

Small fibroids seem to grow rapidly in the first weeks of pregnancy, with a nonlinear trend, in relation to the similar growth of human chorionic gonadotropin in the same period.

## EARLY PREGNANCY

**1236 Diminished ovarian reserve: is it a neglected cause in the assessment of recurrent miscarriage? A cohort study**



M. Atasever, Z. Soyman, E. Demirel, S. Gencdal, and S. Kelekci  
*Giresun, Istanbul, and Izmir, Turkey*

Diminished ovarian reserve may be a hidden cause for recurrent miscarriage regardless of maternal age.

**1261 Discriminant analysis forecasting model of first trimester pregnancy outcomes developed by following 9,963 infertile patients after in vitro fertilization**



Y. Yi, X. Li, Y. Ouyang, G. Lin, G. Lu, and F. Gong  
*Changsha city, Hunan, People's Republic of China*

A forecasting method was developed to predict first trimester pregnancy outcomes through ultrasound scan on days 27–29 after ET and the follow-up can be planned accordingly.

## ENDOMETRIOSIS

### 1266 Estrogen receptor $\beta$ regulates endometriotic cell survival through serum and glucocorticoid-regulated kinase activation



D. Monsivais, M. T. Dyson, P. Yin, A. Navarro, J. S. Coon 5th, M. E. Pavone, and S. E. Bulun  
*Chicago, Illinois*

Estrogen receptor (ER)  $\beta$  is aberrantly overexpressed in ectopic endometriotic tissues. This study demonstrates that ER $\beta$  regulates the transcription of SGK1, a kinase that promotes apoptotic resistance in endometriosis via FOXO3 inactivation.

## ENVIRONMENT AND EPIDEMIOLOGY

### 1274 Who receives a medical evaluation for infertility in the United States?



L. V. Farland, A.-r. Y. Collier, K. F. Correia, F. Grodstein, J. E. Chavarro, J. Rich-Edwards, and S. A. Missmer  
*Boston, Massachusetts*

In addition to financial access influencing who receives a medical evaluation for infertility, demographic and healthy lifestyle characteristics are associated with a medical evaluation for infertility among infertile women.

### 1281 Practice patterns, satisfaction, and demographics of reproductive endocrinologists: results of the 2014 Society for Reproductive Endocrinology and Infertility Workforce Survey



K. T. Barnhart, S. T. Nakajima, E. Puscheck, T. M. Price, V. L. Baker, and J. Segars  
*Philadelphia, Pennsylvania; Stanford, California; Detroit, Michigan; Durham, North Carolina; and Baltimore, Maryland*

Members of the Society of Reproductive Endocrinologists and Infertility have a focused practice, sense a change in scope of practice, envision minimal growth, and have very high professional satisfaction.

### 1287 Searching for a common mechanism for placenta-mediated pregnancy complications and cardiovascular disease: role of lipoprotein(a)



I. Romagnuolo, E. Sticchi, M. Attanasio, E. Grifoni, G. Cioni, A. P. Cellai, R. Abbate, and C. Fatini  
*Florence, Italy*



This study shows an association between lipoprotein(a) concentrations and history of stillbirth and preeclampsia. This well-known atherothrombotic marker might represent one of the mechanisms shared by obstetrical and cardiovascular disease.

### 1294 Prospective evaluation of the impact of intermenstrual bleeding on natural fertility



N. M. Crawford, D. A. Pritchard, A. H. Herring, and A. Z. Steiner  
*Chapel Hill, North Carolina*

An episode of intermenstrual bleeding statistically significantly decreases the odds of conception in the current cycle but does not appear to negatively impact a woman's future reproductive potential.

### 1301 Misleading reporting and interpretation of results in major infertility journals



D. Glujovsky, C. E. Sueldo, C. Borghi, P. Nicotra, S. Andreucci, and A. Ciapponi  
*Buenos Aires, Argentina; and San Francisco, California*

Recommended reporting items, such as confidence intervals and absolute differences, are underused in top infertility journals, which could lead to misleading interpretations.

## GENETICS

### 1307 Effects of maternal age on euploidy rates in a large cohort of embryos analyzed with 24-chromosome single-nucleotide polymorphism-based preimplantation genetic screening



Z. P. Demko, A. L. Simon, R. C. McCoy, D. A. Petrov, and M. Rabinowitz  
*San Carlos and Stanford, California; and Seattle, Washington*

For 37,711 embryos analyzed with 24-chromosome single-nucleotide polymorphism-based preimplantation genetic screening, the number, proportion, and probability of embryos testing as euploid per IVF cycle were stratified by maternal age.



## MENTAL HEALTH, SEXUALITY, AND ETHICS

- 1314 Does polycystic ovary syndrome affect cognition? A functional magnetic resonance imaging study exploring working memory**



R. S. Soleman, B. P. C. Kreukels, D. J. Veltman, P. T. Cohen-Kettenis, P. G. A. Hompes, M. L. Drent, and C. B. Lambalk  
*Amsterdam, the Netherlands; and Ghent, Belgium*



Antiandrogenic treatment appears to have a beneficial effect on working memory in women with polycystic ovary syndrome.

## REPRODUCTIVE ENDOCRINOLOGY

- 1322 Sonographic markers of ovarian morphology, but not hirsutism indices, predict serum total testosterone in women with regular menstrual cycles**



H. Vanden Brink, A. D. Willis, B. Y. Jarrett, A. W. Lin, S. Soler, S. Best, E. L. Bender, A. K. Peppin, K. M. Hoeger, and M. E. Lujan  
*Ithaca and Rochester, New York*



We discuss how total testosterone levels were predicted by sonographic markers of ovarian morphology, not hirsutism scores; and how the predictive value of ovarian morphology for total testosterone differed by menstrual cycle status.

- 1330 Higher *PDCD4* expression is associated with obesity, insulin resistance, lipid metabolism disorders, and granulosa cell apoptosis in polycystic ovary syndrome**



L. Ding, F. Gao, M. Zhang, W. Yan, R. Tang, C. Zhang, and Z.-J. Chen  
*Jinan and Shanghai, People's Republic of China*



In polycystic ovary syndrome (PCOS), higher *PDCD4* expression promotes obesity, insulin resistance, lipid metabolism disorders, and induced granulosa cell apoptosis, which is an independent risk factor for PCOS.

- 1338 Cardiovascular disease risk in first-degree relatives of women with polycystic ovary syndrome**



V. P. Vipin, P. Dabadghao, M. Shukla, A. Kapoor, A. S. Raghuvanshi, and V. Ramesh  
*Lucknow, India*



Increased risk of cardiovascular disease in parents of polycystic ovary syndrome as evidenced by increased carotid intima media thickness and low brachial artery flow-mediated dilatation as compared with matched controls.

- 1345 Spontaneous endogenous pulsatile release of kisspeptin is temporally coupled with luteinizing hormone in healthy women**



B. Meczekalski, K. Katulski, A. Podfigurna-Stopa, A. Czyzyk, and A. D. Genazzani  
*Poznan, Poland; and Modena, Italy*



Measuring the plasma concentrations of kisspeptin, this study reveals groundbreaking evidence suggesting that kisspeptin and luteinizing hormone are cosecreted and temporally coupled in healthy women.

## REPRODUCTIVE SCIENCE

- 1351 Cited2 protein level in cumulus cells is a biomarker for human embryo quality and pregnancy outcome in one in vitro fertilization cycle**



Y. Fang, W. Shang, D.-L. Wei, and S.-M. Zeng  
*Yangzhou and Beijing, People's Republic of China*



Higher Cited2 level in human cumulus cells is associated with decreasing embryo quality and pregnancy outcome in IVF patients, which may be attributed to apoptosis and abnormal gluconeogenesis in cumulus cells.

- 1360 Kinetics of the early development of uniparental human haploid embryos**



M.-J. Escribá, L. Escrich, Y. Galiana, N. Grau, A. Galán, and A. Pellicer  
*Valencia, Spain*



The early development of human haploid parthenotes and androgenotes in comparison with correctly fertilized eggs (biparentals) showed more kinetic differences according to parental composition than haploidy.

## REPRODUCTIVE SURGERY

- 1369 In-bag manual versus uncontained power morcellation for laparoscopic myomectomy: randomized controlled trial**



R. Venturella, M. L. Rocca, D. Lico, N. La Ferrera, R. Cirillo, S. Gizzo, M. Morelli, E. Zupi, and F. Zullo  
*Catanzaro, Padua and Rome, Italy*

Protected manual in-bag morcellation may be considered efficient and feasible in that it does not interfere with surgical outcomes in women undergoing laparoscopic myomectomy.

## VIDEO

### e16 Challenging the cervix: strategies to overcome the anatomic impediments to hysteroscopy: analysis of 31,052 office hysteroscopies



S. Bettocchi, S. Bramante, G. Bifulco, M. Spinelli, O. Ceci, F. D. Fascilla, and A. Di Spiezio Sardo  
*Bari, Pescara, and Naples, Italy*



Recent technical and technologic innovations have allowed overcoming even severe stenosis of the cervix with the use of office hysteroscopy, thus significantly reducing the rate of failed procedures requiring a further inpatient hysteroscopy.



: Connects to the discussion forum



: Article is only available online



: Complete article available online

Visit [www.fertstert.org](http://www.fertstert.org) for e-only and e-extra materials

## ERRATUM

### 1377 Erratum

**Complete Guide for Authors** may be found on the journal's website, <http://www.fertstert.org/authorinfo>

Cover image: Photomicrograph of sperm provided courtesy of Gail Prins, Ph.D. Used with permission.