From the Editor

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Having just returned from the ASRM meeting in Atlanta, it was patently obvious to myself and those in attendance that the pace at which technological and conceptual breakthroughs are emerging will keep JARG replete with articles that will both inform and guide our efforts in the laboratory and clinic for years to come. In striving to meet our avocation as a conduit for the publication of frontline research and facilitator for keeping abreast of this surge of new knowledge, this issue convenes for our readers a series of papers that signal the robust nature of advances in reproductive medicine that lie on the not-so-distant horizon.

There has been much ado about “something” in the ART field as it pertains to the impact of this technology on the occurrence and incidence of imprinting disorders in ART offspring but to quote David Crosby, “what it is ain’t exactly clear.” Thus, I strongly encourage our readership to examine the lead review article in this issue by Dr. Merlin Butler, a world authority on pediatric genetics and Prader-Willi Syndrome, so you can familiarize yourselves with the advances in this area that point out both the genetic and epigenetic bases for these extremely rare forms of human disease. From an informed perspective, such as the one provided here, we can begin to formulate approaches that will eventually permit a deeper understanding of the interplay between genetic and epigenetic forces that are manifest during the earliest stages of human development. And along those lines, the ongoing discourse revolving around the topic of preimplantation genetic screening (PGS) gains momentum from the article from the Summers group that attempts to deconstruct from a mathematical perspective exactly what this

new technology brings to the practice of ARTs. And, as a reminder of our genetic complexity new work from the Ayvaz team uncovers a novel relationship between ER polymorphisms and cases of unexplained infertility.

The interface between ARTs and the world of cryopreservation continues to blur as several papers in this issue illustrate. New insights into the effects of vitrification on human embryos are provided by the works of Hiraoka and Raju and their colleagues that reinforce the relative contributions of zona pellucida and trophoblast integrity in relation to pregnancy outcome. Transiting back into the world of gamete banking by freeze drying, Suzuki et al. illustrate the utility of mouse oocytes in assessing the competence of canine sperm to undergo functional transformation into pronuclei. And a case report from Kyono provides an interesting account of twins born after SET as an example of Mother Nature collaborating in real time with ART.

Finally, there is much ado these days about the health and well-being of our DNA from the time our gametes leave the comfortable surrounds of our gonads up to and through the consequences of lifelong exposures that lead us down the weary path of senescence. A superb review has just appeared on the topic of DNA damage and repair that I encourage our readers to explore (Jackson and Bartek 2009, *Nature* 461:1071). It becomes increasingly clear, and finds support in the papers from Tremellen and Miyamoto in this issue, that there is a race against time during the process of spermatogenesis to evade carryover of mutations owing to a robust surveillance system within the testis that senses DNA damage, enlists a sophisticated corps of repair engineers, and finally allows passage of only those sperm that make the grade in their genetic integrity. Failure of any of these steps due to chronic oxidative damage leads to death by apoptosis, and apparently this may underscore certain types of male infertility.

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