

From the Editor

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The August issue of JARG begins to highlight a level of throughput on two recurrent themes. The first of these has to do with the evaluation of gamete and embryo quality especially as it pertains to the increasing demand and usage of cryopreserved materials. While the momentum has shifted away from slow freeze protocols to those that employ the strategy of vitrification, questions remain as to the optimization of technologies for use in human ARTs given the widely divergent methods that we deploy in assessing both the viability and developmental capacities of gametes or embryos that have been subjected to cryopreservation. In what we anticipate to be an ongoing series of minireviews that will afford the JARG readership an opportunity to consider both the practical and foundational elements of this area, Zini and his colleagues offer an in depth look at the issue of DNA damage in sperm from a clinical perspective. The rudimentary elements of cellular toxicities as they are enacted within sperm during routine or storage conditions are considered and insights provided as to the direction of future studies to both improve as an overall goal, sperm quality but towards the more specific end, unravel both the appropriate collection of assays that are clinically tractable and those that provide a clearer picture as to the causes and consequences of DNA damage in the male germ line. That these are likely to be revealed as distinct lesions in DNA depending on the stage of spermatogenesis being targeted, the environmental life history of the patients, and the ways in which we handle sperm in anticipation of ICSI or IVF will be worthy areas of

future investigation that our colleagues will pursue with direction as indicated in this review.

Towards this end, it is hardly happenstance that three papers follow emphasizing the widely acknowledged need to better our ability to discriminate between embryos of variable quality with respect to long term or short term outcome measures. To wit, Hentemann and colleagues revisit the question of gender bias in offspring produced by either IVF or ICSI and Sun et al., add yet another voice of confidence that monitoring the rate of early cleavage in human embryos is indeed a valid predictor of implantation and gestational performance. In fact, the latter group reminds us that while the pace of early development may confer a distinct developmental advantage at later stages of pregnancy, the link between accelerated cell cycles and quality measures as a predictive tool remains entirely obscure. Perhaps some insight into the mechanisms underlying this curious and penetrant observation will derive from the paper of Guarif et al., in this issue where Day 2 evaluations in embryos of younger patient cohorts again have predictive value for overall outcomes.

Returning to the question of cryopreservation, a remarkable tour de force is illustrated by the group of Kyoto who report the birth of a male produced by not one but three frank episodes of storage along the ART pathway. This child is the product of frozen sperm, vitrified oocytes, and vitrified blastocysts. As cryopreservation expands in its utility, tracking offspring health in cases such as this becomes an evergrowing imperative for our community.

Keeping with traditional genetic perspectives, the Fenollar-Cortes and Butler groups expand our purview in drawing attention to both recent advances in genetic diagnoses suited well for better characterization of debilitating skeletal disorders and bringing into the spotlight the field of imprinting disorders. The novel findings that

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children with Prader-Willi Syndrome bear adverse gestational conditions should make us all reflect again on the impact that embryo quality has on the establishment and maintenance of pregnancy.

And finally, we close this issue with a reminder of the importance of revisiting basic tenets of ARTs in animal models. Using caprine sperm, optimization of cryopreservation is found to be critically sensitive to the presence of

electrolytes that have long been suspected to complicate the already compromised osmotic regulation that attends both the freezing and thawing phases of protocols as we have adopted them in the case of human ARTs.

Do let us know as our menu of minireview topics appears over the next few issues if we can better address contemporary questions engrained in our mission during JARG's continued evolution.