

Quality control in the ART laboratory: matters arising

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Much progress has been made over the past two decades in bringing the specialty of reproductive medicine into the lives of so many afflicted with various kinds of infertility. That patients seeking out ART-based treatments come from many sectors of society is well known as access to care expands. And the human conditions prompting arrival in the ART clinic are now manifold and increasing as we move well past the “unexplained,” the poor semen, or the tubal occlusion and into the era of saving, rescuing, or replacing reproductive competence as a result of advancing age, iatrogenic or environmentally induced gonadal failure, or the desire of patients to put their germ plasm on hold for later use.

One of the many reasons for the growth of human ART, besides availability and demand, is the pace at which the embryology laboratory has evolved. Scientific advances in the handling and manipulation of gametes and embryos have now been passed along to a generation of talented people mindful of the care and attention to detail who have teamed with physician specialists to make dreams come true for so many patients around the world. The acquisition and enactment of the embryologist's skills are exceeded only by their sensitivity to the particular needs of their patients and the dutiful reliance to staff and physicians that make achieving a pregnancy a reality.

Capsule From the macro to the micro, air quality looms as a major determinant for the realization of developmental competence in human embryos. The question becomes a matter of how long we should keep the conceptus ex vivo.

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One of the less apparent, but equally important, responsibilities shouldered by embryology lab directors is looking after the infrastructure and quality control that serves as a primary determinant of clinical success and satisfies the rigorous standards of compliance expected of our profession and regulatory bodies. Towards this end, this issue focuses on the issue of quality control to remind our readership of the many assumptions we make in the daily operation of the laboratory and the consequences of even the slightest perturbations in our methods, environment, and infrastructure that influence clinical outcome.

That chance events reveal our vulnerability is often the case (Duran et al., Lack of carbon air filtration impacts early embryo development [10.1007/s10815-015-0495-1](https://doi.org/10.1007/s10815-015-0495-1)). As the paper by Duran and colleagues from the University of Iowa demonstrates, air quality cannot be underestimated (just as the field of ARTs has finally adopted lower oxygen tension for the daily culturing of human embryos). And on this occasion, Dean Morbeck provides our readership with a critical evaluation of the matter of air quality (Air quality in the assisted reproduction laboratory: a mini-review; DOI [10.1007/s10815-015-0535](https://doi.org/10.1007/s10815-015-0535)). Why this matters so much on a macrolevel should give us pause when we think of the sensitivity of human embryos on a microlevel as well.

As alluded to above, culture media oxygen tension is but one of the many factors now recognized as an influence on the developmental competence of the conceptus. And given that current trends foster the belief that more time in culture will improve pregnancy rates, availing additional opportunities to do more quality assessment than less since the star of the show is spending more time ex vivo as it progresses (hopefully) to the blastocyst should in principle better serve our patients. Based on our past efforts to bring human ARTs “back to nature” (as John Biggers has spent a lifetime

showing), the real question emerging is whether or not our desire to put a clinical “worth” on a given embryo compromises chances of a term pregnancy.

While the jury is still out on the matter of morphokinetics, as summarized in the contribution by Catherine Racowsky at Harvard Medical School (*A critical appraisal of time-lapse imaging for embryo selection: where are we and where do we go?*; DOI [10.1007/s10815-015-0510-6](https://doi.org/10.1007/s10815-015-0510-6)), time will tell to what extent our voyeuristic tendencies enhance our commitment to patient care.

Finally, it is a pleasure to welcome Elpida Fragouli, Karl Hansen, Lynda McGinnis, and Kelli Pagidas to the JARG editorial board in keeping with our goal to maintain the highest standards of integrity and coverage in areas of research now impacting the reproductive medicine community. We also take this opportunity to acknowledge the contributions of T. Rajendra Kumar, Yaakov Bentov, Samir Hamamah, and Alex C. Varghese who have served laudably as members of the JARG editorial board over the past several years.