



From artefactual to artificial intelligence—meeting the needs of ART patients and practitioners

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Beachside conversations for vacationers up here in the northern hemisphere have acquired more the tone of dismay, malcontent, incredulity, and *what next* given the abrupt changes in the global political landscape witnessed over the past year. Distinguishing fact from artefact, fiction from non-fiction, or historical from hysterical fiction, has become part and parcel of a world order turned upside down. And with fertility and infertility frequenting these conversations, those of us working in the world of reproductive medicine and biology quickly come to realize what it is like being in the public limelight during such troubled times. Under the microscope we now reside—subject to the whims and fancies of a media infrastructure that is as disabled as it is misleading to consumers of ARTs—take a look at one of the many examples that appeared this summer here in the USA: <https://www.cbsnews.com/news/ivf-testing-spurs-debate-over-mosaic-embryos/>.

Against this backdrop, we bring the subject of decision making in ARTs into focus. And beyond the element of chance, the articles comprising this issue of JARG were *low-hanging fruit* when it became apparent to your EiC that the time has come to implement the tools of artificial intelligence (AI) with respect to infertility diagnoses and treatments, as it has in most all branches of Medicine today. Ambiguities aside when it comes to being informed, physician and patient attitudes and the counseling tools derivative from such much-needed knowledge have been surprisingly underrepresented in our discipline.

To wit, the discourse regarding embryo selection continues unabated. Trying to make some sense out of the data streams coming from time-lapse imaging (TLI), PGT-A, and good old morphology (would we not all choose the embryo featured on

our cover this month for transfer?) has resided squarely in the laps of proponents, opponents, naysayers and the casually bemused unbiased observers who ask “What does this all mean? What do I tell my patients? Who am I to believe?” This conversation continues with the contribution by Rocafort and collaborators (*Euploid embryos selected by an automated time-lapse system have superior SET outcomes than selected solely by conventional morphology assessment*, <https://doi.org/10.1007/s10815-018-1265>) once again pitting technologies against one another in search of the perfect embryo selection tool.

We are not there yet, but one potential resolution for our differences of opinion is to take the matter of decision making out of the hands of practitioners trying to escape the bonds of subjectivity and place it under the purview of the up and coming field of AI. Our lead article this month from Simopoulou and her colleagues (see cover) serves as an introduction to all matters AI having to do with current measures of embryo quality with regard to pitfalls, promises, and future directions (*Are computational applications the “crystal ball” in the IVF laboratory? The evolution from mathematics to artificial intelligence*, <https://doi.org/10.1007/s10815-018-1266>).

Back to the subject of counseling strategies built upon firm evidential foundations emerging from new studies. Exemplary among these, and capturing the lion’s share of attention from the media, has been the topic of elective oocyte freezing addressed in a recent publication by Goldman et al. [1]. Call it elective, selective, social, of the oocyte or egg varieties (and consequential acronyms), this dimension of human ARTs has attracted so much popular interest that it is surprising that so little attention has been paid in the medical literature until very recently. Following up studies ranging from what patients believe and think they know [2] to legal implications [3] to lifestyle management and the future of family planning [4], egg banking has become big business. And not surprisingly, concerns over unfair marketing practices founded in the quest for truth (or truthiness as Stephen Colbert likes to call it) will continue until the readout for long-term storage arrives some

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decades from now [5]. The selection of papers offered this month look at the problem of achieving effective counseling from many angles and will hopefully serve as templates for ongoing research into this key dimension of ARTs that is so rapidly evolving.

Finally, for those of us assuming responsibility for the conduct, implementation, and publication of studies relevant to the advancement of ARTs, keeping the issue of conflicts-of-interest (COI) front and center continues to be a challenge at all levels—from authors to reviewers to editors—and is encouraging vigilance on the pathway to producing untainted knowledge upon which good practice and dissemination of facts must be realized. Towards this end, the tools needed to assure objectivity in the design and application of new technologies are emerging and must be taken into consideration sooner rather than later [6].

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