

AI fertility company secures \$6M for global expansion

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By Catherine Longworth

Canadian company Future Fertility Inc. is hatching plans to expand the user base for its flagship egg prediction software product, Violet, for egg cryopreservation. The noninvasive image analysis tool uses artificial intelligence (AI) to evaluate the reproductive potential of mature eggs. Investors are backing the Toronto-based company with \$6 million in series A funds, so it can expand internationally and develop additional assessment products.

In vitro fertilization (IVF) costs on average more than \$20,000 per treatment cycle and has a high failure rate, with less than 30% of egg retrievals across all age groups resulting in live births. Current methods to evaluate viability are visual assessments of sperm, egg, embryos and endometrium but there is no validated visual scoring system.

“Finding a method to evaluate egg quality has been a top priority in the field since it has implications in all aspects of care – elective egg freezing, donor eggs and IVF cases,” Future Fertility CEO Diana Olusanmi told BioWorld. “Having a noninvasive objective and accurate method to evaluate oocytes allows you to finally assess any interventions that may impact egg quality and is also a critical counselling tool for patients struggling to conceive and looking for insights into the underlying causes.”

Violet aims to address some of the problems related with treatment by using AI. The tool was developed from more than 20,000 images of mature eggs and their IVF lab outcomes, from fertilization to blastocyst development. “It's able to detect patterns and signals not possible even by trained embryologists. It was designed to connect seamlessly into the IVF lab with a camera attached to a standard light microscope port, and only requires a single image of a mature egg for a complete evaluation,” said Olusanmi.

M Ventures (the corporate venture capital arm of Merck KGaA) joined the company's series A round, as well as Whitecap Venture Partners.

Challenges for AI fertility tools

Beyond Violet, Future Fertility is developing additional AI assessment products to improve the IVF journey. However, while the use of AI algorithms/AI is growing to guide IVF treatment, acquiring quality data is a challenge to develop reliable algorithms and experts have warned that appropriate approaches are needed to develop accurate predictive models. A 2020 study “AI in the treatment of fertility” outlined some of the key considerations.

The development of AI-based solutions for assistive reproductive techniques is complex for several reasons such as a small general population of patients being treated which leads to small data sets. In addition, there is a lack of standardization with AI studies, which causes a lack of homogeneous data sets.

Different data protection laws and regulations in the world also pose an issue to apply and scale AI solutions. “There are unclear regulatory approval routes that differ by country. In the treatment of fertility, data generation is fragmented and makes the application of AI solutions a challenge,” wrote researchers.

“Another potential issue with universal use of AI in treatment of infertility arises from clinic competition and intellectual property. Will developed algorithms/AI become a commodity, specific for a particular clinic, or will these decision-making tools be widely available and applicable between centers? Certainly, the hurdles that accompany data confidentiality and clinic competition will need to be addressed,” the study concluded.

Future Fertility’s series A round came as South San Francisco-based company Mirvie Inc. published results from a study evaluating use of a blood test to predict complications in pregnancy before symptoms show. The RNA platform uses blood to reveal vital information about a pregnancy’s unique biology and detect complications months before they occur.

Results comprised 1,840 racially diverse pregnancies and retrospective analysis of 2,539 banked plasma samples and showed that cfRNA signatures from a single blood draw could track pregnancy progression at the placental, maternal, and fetal levels and robustly predict pre-eclampsia, with a sensitivity of 75% and a positive predictive value of 32.3%, superior to the current standard method.

“This study demonstrates that RNA profiles reveal normal pregnancy development over time, enabling the early identification of moms at risk for pregnancy complications. The results demonstrate that we can predict preeclampsia early in pregnancy, before it becomes a threat to the mother and baby. This predictive ability is unprecedented in contemporary Obstetrics,” said the study’s senior author Thomas McElrath, professor of obstetrics, Harvard Medical School.