Choosing the best embryos—researchers pave the way to successful pregnancies

October 23 2019

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Struggling with infertility? You are not alone. Infertility affects one out of every six Canadian couples. Some resort to in vitro fertilization, with mixed results. In a study published in *Nature Communications*,

researchers from the University of Montreal Hospital Research Centre (CRCHUM) unveiled a mechanism that likely contributes to the low level of pregnancy success in some fertility clinics. This new information could ultimately increase women's chances of having a baby.

Healthy cells usually have one nucleus, where DNA containing our genetic information is stored. Embryos that are created in vitro in fertility clinics to enable women to have a child, often have cells with two nuclei. As of today, many fertility clinics still transfer these so-called "binucleated embryos" back to the patient's uterus.

"In our study, we showed in mouse embryos that binucleation has profound consequences. Basically, having two nuclei is bad news for the embryo. We found that binucleation increases the chances of the embryo developing a condition called aneuploidy, which reduces embryo health and could contribute to pregnancy failures," explained Lia Paim, first author and Ph.D. student in Dr. Greg FitzHarris lab.

"We hope our results will help fertility clinics to select the best embryos to be transferred back to the patients. This step is one of the keys to success when it comes to in vitro fertilization. Ultimately it could increase some couples' chances of giving birth," said Mrs. Paim.

This study is at the basic research stage and was carried out in the laboratory on mice. "Basic science experiments such as Lia's allow us to understand how embryos develop, to help inform our clinical colleagues how to select the best embryos in the clinic," added Dr. Fitzharris, CRCHUM researcher and professor at the Université de Montréal.

Infertility may be more common than you think. The number of people with fertility problems has doubled since the 1980s.

More information: "Tetraploidy causes chromosomal instability in

Medical Xpress

acentriolar mouse embryos" by Lia Mara Gomes Paim et al. in *Nature Communications*. DOI: 10.1038/s41467-019-12772-8

Provided by University of Montreal

Citation: Choosing the best embryos—researchers pave the way to successful pregnancies (2019, October 23) retrieved 11 February 2023 from https://medicalxpress.com/news/2019-10-embryosresearchers-pave-successful-pregnancies.html

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