***A World Without Eggs***

By: Shan Kurkcu

On July 25, 1978, the world witnessed the birth of Louise Joy Brown. Born in Great Britain, Louise was the first baby born via in vitro fertilization. Well, the Brits have yet again defied a long held central dogma. This time the Brits have shown that conception need not be constrained by an egg donor.

Scientist have been able to induce the development of an unfertilized egg into an embryo for quite some time now (parthenogenesis). The first significant breakthrough in parthenogontes, in humans, was at the hands of Dr. Elena Revazova and her team. Dr. Elena Revazova successfully created stem cells from a parthenogenote in 2007. However, Suzuki, T. and his team of Scientists at Bath in england have fertilized a parthenogenote using sperm. Moreover, 24% of the parthenogenotes went on to develop into a healthy mouse pups. This is significant in that it marks the first time development, to term, has been achieved via introducing sperm into an egg which had already begun developing into an embryo. In other words the process of mitosis had already begun with only half the DNA required when the sperm was introduced. The success came in finding that the “programing” of sperm not only occurs at fertilization, but may also occur at the beginning of the first mitotic M-phase. Allowing for a window of time to introduce sperm to a parthenogonte.

*“These studies demonstrate that mitotic embryos are able to remodel sperm chromatin completely, leading to the direct production of healthy animals. Full sperm reprogramming is therefore not unique to oocytes, showing that sperm chromatin reprogramming machinery is present at different development stages and in other cell types.”*

The team believes that the finding elucidates a possible mechanism in which cells, which have been induced to express pluripotency, may develop into viable embryos which can be carried to term. Prior to these findings it was believed that the biological pathways needed to program a sperm to fertilize an egg lied with in the egg. However, the ability for a cell other than an egg to be fertilized is now a possibility. Dr Perry, a member of the team which performed the research is quoted by Abigeal Beall, in her article as saying “‘we're saying is that these embryos are mitotic cells - mitotic cells are the type of cell that almost every dividing cell in your body is. And therefore, potentially, one day we might be able to extend what we've shown in these mitotic cells to other mitotic cells’”.

In conclusion the implication of these findings may have exciting societal implication. Although further research is needed, this would allow for couples, who do not have to ability to conceive children on their own, to do so. In the field of science, the findings have begun to unravel some of the mystery behind fertilization and development.

Work Cited:

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