

World's first IVF baby born after preimplantation genome sequencing is now 11 months old

July 22 2013

The largest genomic institute of the world, BGI Shenzhen, China (hereinafter BGI), together with Reproductive & Genetic Hospital CITIC-XIANGYA (hereinafter CITIC-XIANGYA) announced today that they have successfully applied Next Generation Sequencing (NGS) to detect in vitro fertilized (IVF) embryos with genetic abnormalities. The successful application of preimplantation sequencing (the most advanced form of preimplantation genetic screening, PGS) opens a new chapter in the field of human assisted reproduction, providing new hopes for IVF couples.

In preimplantation sequencing, 7 to 12 cells are removed from morphologically normal human embryos 5 days after fertilization in vitro. Embryos are subsequently cryopreserved by vitrification, and samples are analyzed by using the latest DNA technologies to detect abnormalities. Only genetically intact embryos are transferred to the uterus during the subsequent cycle, with minimal or no hormonal stimulation.

Since 2010, as a result of collaboration between BGI and CITIC-XIANGYA, sequenced embryos from 33 couples were transferred, and 22 pregnancies were achieved. The success rate was 66.7%. Up to now, 17 healthy babies were born.

On August 24, 2012, the world's first IVF baby sequenced before

implantation was born in Hunan Province, China. Five days after fertilization in vitro, 7 embryos were biopsied and all samples were shipped to BGI for preimplantation sequencing. Based on a combination of NGS and bioinformatics analysis, 3 embryos were found to have normal chromosomal content and two of them were selected for transfer resulting in pregnancy. The baby is now 11 months old, healthy and developing normally.

On the 29th Annual Meeting of the European Society for Human Reproduction and Embryology (ESHRE) London, 7-11 July, 2013, research findings of BGI and CITIC- XIANGYA were presented in the lecture of Dr. Jian Li and colleagues from BGI, creating considerable acknowledgement among experts worldwide. In the next talk, Dr. Dagan Wells and colleagues from Oxford University announced the birth of the first IVF baby of the Western Hemisphere after genomic sequencing in England.

Professor Guangxiu Lu, President of CITIC XIANGYA and one of the founders and pioneers in human [assisted reproduction](#) in China called the birth as a landmark event in human IVF. As sequencing is the most accurate method for detection of genetic anomalies, doctors can transfer the best [embryos](#) of the cohort, this way pregnancy rates may be increased and the chance of abnormalities of genetic origin decreased.

Dr. Yutao Du, Vice-President of BGI Health Group said that with the introduction of new procedures, the cost of sequencing has decreased dramatically. Accordingly, preimplantation sequencing will become a choice for more and more IVF couples. The accuracy is increasing continuously, and new bioinformatic analysis approaches enable scientists to detect specific genetic disorders, even from single cells. Accordingly, preimplantation sequencing may have a crucial role in improving the efficiency and safety of human assisted reproduction.

Provided by BGI Shenzhen

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