70th Congress of the American Society of Reproductive Medicine (ASRM)

THE SCIENTIFIC DIRECTOR OF IGENOMIX, CARLOS SIMÓN, RECEIVES THE KY CHA AWARD FOR INVESTIGATION INTO CELLULAR REPROGRAMMING.

- **The award-winning research aims to generate sperm and egg cells by reprogramming skin cells.**
- **Igenomix presents an advance in non-invasive embryonic selection.**

HONOLULU (HAWAII), 20 OCTOBER, 2014

The research ***Direct conversion of human somatic cells to meiotic germ-like cells by genetic reprogramming,*** with the aim of creating sperm and egg cells from patients lacking them by reprogramming the patient's own skin cells, was awarded the **KY CHA Award in Stem Cell Technology**, a $20,000 prize fund provided by the ASRM to start this new regenerative medicine and stem cell technology-based project.

This study proposes the creation of a model for directly reprogramming human somatic cells into stem cells by genetic manipulation. "We must deepen our investigation into the development of human germ line cells to be able to further advance [in the field] and to offer solutions other than gamete donation when the inability to produce these cells is the cause of infertility in couples. Therefore in this research we are trying to create haploid gametes (with only one set of chromosomes) using somatic skin cells which are diploid (with two sets of chromosomes) by cellular reprogramming with six specific factors", explained **Dr. Carlos Simón**.

In Spain between 15-17% of reproductive-age couples have fertility problems caused by different factors. When functional gamete production is the cause of infertility, the solution is usually sperm or ovum donation. However, gamete donation is only a way to mask the problem and is not a solution for many couples who have biological impairments stopping them from producing sperm or egg cells. This is why studying the development of human germ line cells is needed to advance the understanding of this process.

Cellular reprograming

It has already been possible to reprogram differentiated cells with specific functions in the human body into pluripotent cells capable of generating most human tissues. The research that achieved this transformation inspired other groups of investigators who have been able to directly transform fibroblasts from connective tissue into a neurons, blood precursors, cardiomyocytes (cardiac muscle cells), and even Sertoli cells (cells located in the testes) without passing through cellular differentiation states.

New chromosomal anomaly prediction model

Research by IGENOMIX titled ***Prediction model for aneuploidy in early human embryos based on the transcriptomic signature***, which was presented at the meeting, opens the doors to a new aneuploidy prediction model based on the transcriptomic signature (a set of molecules expressed by a cell) of 12 genes that allows the accurate detection of chromosomal anomalies at the earliest stages of embryonic development.

"This study is key to the development of non-invasive diagnostic methods. The most reliable method of aneuploidy detection is currently CGH arrays, but these require a cell to be extracted on day 3 of development, or several on day 5", explained **Maria Vera,** IGENOMIX researcher and lead author of the study. She continues, "We have managed to show that aneuploid embryos are already altered at the transcriptomic level before day 3 of development, which allowed us to develop a non-invasive test".

Thanks to a collaboration with Stanford University (California) IGENOMIX was able to exclusively use zygotic-stage embryos in its study, which allowed a combination of three different factors to be analyzed (chromosomal status and genetic and morphokinetic expression) in the same embryo, including euploid embryos.

About IGENOMIX

IGENOMIX is a company with broad experience in genetic and molecular diagnosis in Europe and one of the world references in these techniques. Our efforts in R&D, enable us to create and develop specific tools to support professionals in the reproductive medicine field. We offer services such as PGS, PGD, ERA (Endometrial Receptivity Array), POC and CGT (Compatibility Genetic Test).

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