

Music enhances In Vitro Fertilisation

- **The vibrations increase the chances that the sperm fertilises the egg**
- **The study was presented at the congress of the European Society of Reproduction (ESHRE) held from 7 to 10th July in London**

Barcelona, 10th July, 2013.

Micro musical vibrations facilitate the fertilisation of the egg in the laboratory. This is the main conclusion of the paper entitled "*Impact of exposure to music during in vitro culture on embryo development*", presented by [Institut Marquès](#) at the annual meeting of the [European Society of Human Reproduction \(ESHRE\)](#) in London.

This study provides new discoveries for the improvement of fertilisation rates, a key step for the success of IVF treatments.

Its implementation has involved using an embryo incubator with loudspeakers built inside for the first time in the history of assisted reproduction. Working in collaboration with a sound engineering consultancy, Institut Marquès' team of embryologists designed a system capable of playing music inside the incubator 24 hours a day.

The study analysed 985 embryos from 114 different patients. The ova from each patient were divided into two groups which were cultured in two different incubators: one provided with the loudspeaker system and the other a conventional one. The results show that those cultured with music improved their fertilisation rate by 4, 8%.

Furthermore, three different musical styles were chosen, -Pop, Hard Rock and Classical Music- to measure possible variations depending on frequency, but no significant differences were detected between one or the other.

"Our hypothesis", asserts Dr. Marisa López-Teijón, Head of Assisted Reproduction of Institut Marquès and main author of the study, "is that the micro vibrations stir the culture media in which the egg swims, producing a more homogeneous distribution of the nutrients it needs and scattering toxic products by preventing their accumulation".

The IVF Laboratory is like a large uterus

Since the beginning of assisted reproduction, one of its aims has been to achieve the same conditions for the embryos in the [laboratory](#) as in the mother's womb, in temperature, darkness and CO₂ and oxygen levels.

Culture systems have also evolved and currently the embryos are kept in the incubator within micro drops. But, unlike the moment in which the oocytes travel to the uterus surrounded by continuous peristaltic and cellular movements and exchange of metabolites, in the laboratory the embryos remain static and, as a result, the toxins they release (free radicals or ammonium) are stored in that same culture medium.

To avoid this, some recent studies have applied mechanical vibrations to the culture Petri dishes or introduced dynamic fluids into the culture media.

"The novelty of this study", explains Dr. Marisa López-Teijón, "is the use of music as a source of vibrations for human embryos during their in Vitro development. The system is simple to be applied in reproduction laboratories and Institut Marquès is already using it in all embryo incubators."

Movement stimulates growth

The effect of musical vibrations on in vivo cell growth has been studied to date in plant and animal species.

According to a study conducted by the Planetarium of the University of Santiago de Chile, music has a positive effect on the growth and development of snails. Those exposed to music lay more eggs, gain more weight and have better motion. Another study by the National Institute of Biotechnology of South Korea, published in *New Scientist*, found that classical music activates the growth genes of rice plants.

Oenology is another area that has experimented with the effect of musical vibrations. Currently, several Spanish wineries have incorporated music into their production processes to speed fermentation up and give complexity to the wine.

Embryonic Big Brother

The potential of vibrations to increase fertilisation rates, combined with new technologies such as the [Embryoscope](#), is a milestone in the innovation applied to assisted reproduction.

Nicknamed *the Embryonic Big Brother*, the Embryoscope is an advanced incubator that allows the observation of the embryos in it 24 hours a day, and enables to select those that will be most suitable for implantation without having to remove them from the incubator. Thus, the environmental conditions are maintained as if the embryo were in the womb, unaltered.

Last year at the annual meeting of the Spanish Fertility Society (SEF), Institut Marquès presented a pioneer system with which patients who are undergoing a reproduction treatment can watch the development of their embryos in the Embryoscope online. The experience, according to the results also presented this week at the ESHRE, is exciting for couples and helps reduce anxiety, especially foreign patients who can watch live from home how their embryos evolve in Barcelona's lab.

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