

## New tool for selecting embryos in fertility treatments

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Specialists selecting embryos.

A team of researchers from the Universitat Politècnica de València and specialists from the Hospital Universitari i Politècnic La Fe have



developed a new tool, a mathematical model to be exact, to help in the selection of embryos for transfer in fertility treatments.

The model is especially useful for transfers of intermediate quality embryos on the second day after fertilization, when it is possible to estimate the probability of implantation in the <u>uterus</u>. The study was published recently in the journal *Mathematical and Computer Modelling*.

According to the researchers, in order to evaluate the quality of embryos two morphological variables are analyzed: the number of cells and the degree of the embryo which includes the symmetry and the fragmentation of the cells. The best embryos have four cells grade one (symmetric cells with fragmentation below 10%), being the most likely to result in a pregnancy. "But in the fertilization process embryos with these features are not always obtained. Our model would help embryologists to select the embryos that do not meet these requirements but may also result in a pregnancy," the researchers explain.

Although there are other tools to assist <u>embryo selection</u> before transfer, "their predictive ability is inferior to that developed in this model of <u>embryo implantation</u>. Our model, thanks to the <u>statistical techniques</u> used, is faster, more efficient and accurate, as it allows a better selection of the embryos with the higher chance of implanting in the uterus", the researchers point out.

The study also shows that the increasing age of women significantly reduces the chance of pregnancy but the effect is not linear as other studies presuppose. This last step is performed by a model that takes into account the score "Embryo Quality Index (EQI)" calculated by the sum of all scores of embryos transferred to a woman and her age.

How would embryologists use the <u>new model</u>? According to the researchers, the specialists would observe all the embryos with an



inverted microscope and would value the number of cells and degree of each one. These variables would help select the embryos with a higher implantation rate. Then the specialists would obtain the EQI of all the embryos transferred and with this and the woman's age they could predict the likelihood of pregnancy according to the models obtained in this study.

**More information:** A. Debón, et. al., Mathematical methodology to obtain and compare different embryo scores, *Mathematical and Computer Modelling* (2012). DOI: 10.1016/j.mcm.2012.11.027

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