**Is there any alternative to invasive aneuploidy screening? Time-lapse experience.**

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It is becoming ever more apparent that single embryo replacement using a healthy embryo with the highest chance of implanting which results in a single healthy baby at term is the ultimate goal of ART treatment. This implies the ability to screen the embryos in the lab in order to ascertain which has the highest chance of implantation. For this purpose, on embryos, PGS has been employed, but also non-invasive methods of embryo screening could be preferred in the future such as time-lapse, oxygen consumption, proteomics or metabolomics with the ultimate goal of identifying a high-quality embryo.

Some of the efforts made on the identification of the best embryo are summarized in this presentation. Oxygen consumption measurements from oocytes and embryos could be applied routinely in the clinical embryology laboratory in order to assess quality, complementing the classical microscope based methods to select embryos. It has been generated and evaluated a tool for the selection of viable embryos based on the exact timing of embryo development events together with morphological patterns by using an automatic time-lapse system to monitor embryo development.

Embryo morphokinetics is strongly affected by chromosome aneuploidy and further analysis of the chromosome content reveals increased differences when the complexity in the chromosome disorders are increased. The use of time-lapse monitoring system although not able to detect an abnormal embryo may be potentially useful to discard those embryos with high risk of complex chromosomal abnormalities in those patients with preimplantation genetic diagnose indication.

Multiple protein analysis of human embryo secretions offers the chance to expand our perspective of a noninvasive quantification of human embryonic viability and even chromosomal normality avoiding any type of manipulation.