

Conference Materials

# Towards a non-invasive assessment of the pre-implantation human embryo

Carmen Rubio<sup>1</sup>

<sup>1</sup> Igenomix

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URL: <https://www.youtube.com/embed/SCSBnCocqM0>

This informative video presentation, “Towards a non-invasive assessment of the pre-implantation human embryo,” by Dr. Carmen Rubio from Spain, delves into the critical realm of assessing pre-implantation human embryos, underlining the potential of non-invasive methods to achieve this. The significance of such assessments lies in comprehending embryo development, determining quality, identifying abnormalities, and pinpointing genetic issues. These insights are vital for refining assisted reproductive technology (ART) processes.

Embarking on the discussion, the speaker underscores the importance of embryo analysis. By thoroughly examining embryos, researchers gain invaluable insights into their development, quality, and potential issues on a genetic level. This involves comprehensive cell-free DNA testing and sequencing in the culture medium, providing a representative view of the embryo. However, maintaining the purity of the embryo sample and guarding against contamination remain ongoing challenges, prompting the need for advanced protocols and technologies to address these concerns.

The video discusses non-invasive assessments’ clinical utility and accuracy for pre-implantation human embryos. The speaker highlights the encouraging alignment of results obtained through non-invasive analysis of the cell-

free DNA with those from invasive trophoctoderm biopsies, signifying the potential clinical applicability of non-invasive methods. Ongoing research endeavors focused on understanding the release of cell-free DNA by developing embryos offer promising prospects of reliable and comparable results through non-invasive analysis, further bolstering the potential benefits of ART.

The examination of culture media used in embryos revealed the presence of chromosomal abnormalities, offering valuable information to refine the selection process for transferring embryos with higher success probabilities.

Navigating through the risks and challenges of analyzing embryos, the speaker emphasizes the critical role of non-invasive assessment methods. Collaborations and advanced imaging techniques, particularly in understanding human embryo development, present promising avenues for enhanced insights critical for successful assisted reproduction. High-resolution imaging allows a deeper understanding of crucial events in the embryo’s journey.

The video presentation further delves into detailed experiments concerning the cell cycle and chromosomal events during mitosis and interphase in human embryos. Intriguing findings shed light on abnormalities in chromosomal segregation during embryogenesis, distinguishing differences between mouse and human embryos. The intricate dynamics of embryos and technological advancements offer exciting prospects, including live imaging with chromosome analysis, promising to significantly advance the field of embryology.

In collaboration with the Carlos Simon Foundation and Nicolas Plachta lab, the speaker discusses ongoing research focusing on understanding embryo dynamics. Embryo selection analysis showcases promising clinical results, paving the way for potential embryo selection tools. The exploration of testing cell-free DNA in the culture medium marks a burgeoning trend in embryo research, promising exciting advancements for the future.

In the concluding segment, the research spotlight remains on the noninvasive assessment of human preimplantation embryos. The aspiration is to conduct prospective studies, integrating carefully selected parameters to gather invaluable information for the advancement of ART.

In summary, Dr. Carmen Rubio’s enlightening presentation encapsulates the relentless pursuit of knowledge and innovation in assisted reproductive technology. The po-

tential of noninvasive assessment methods to redefine the landscape of embryo evaluation stands as a beacon of hope, promising a future where ART is more refined, efficient, and accessible, ultimately facilitating the dream of parenthood for countless individuals and couples.

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