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## 129. Extracellular vesicles from different endometrial receptivity states influence the early embryo transcriptome

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### Category

Fertilisation and embryo

### Sub-Category

Translational

### Abstract

**Introduction:** Successful embryo implantation depends on the interplay between a receptive endometrium, a competent blastocyst, and embryo-uterine communication. Extracellular vesicles (EVs) play a critical role in this dialogue by transporting biomolecules between the endometrium and the embryo during the pre-implantation and implantation stages. The composition of endometrial EVs changes throughout the menstrual cycle, with distinct profiles in EVs derived from receptive and non-receptive endometrium. However, the precise effects of these endometrial EVs on blastocyst function during pre-implantation are not fully understood.

**Aims:** This study examined the effects of endometrial EVs from receptive, non-receptive, and non-reproductive sources on pre-implantation embryo analogues, focusing on their impact on function and transcriptome. The role of EV miRNAs in mediating these effects was also investigated.

**Methods:** The 3D JAr spheroids, mimicking the blastocyst, were supplemented with EVs isolated from receptive RL95-2 and non-receptive HEC-1-A endometrial cells, as well as non-reproductive HEK293 cells. The resulting transcriptomes of trophoblast spheroids and miRNA profiles of each EV type were investigated using RNA sequencing.

**Results:** Our findings demonstrated that EVs derived from receptive endometrium induced distinct transcriptomic changes in the embryo analogue compared to those from non-receptive endometrium or a non-reproductive control. These alterations primarily affected pathways linked to immune modulation, embryo implantation, and development, including Toll-like receptors (TLRs) and cell adhesion molecules (CAMs). While EV treatment did not impact embryo attachment to the endometrium in our model, we identified specific miRNAs within receptive endometrial EVs, such as hsa-miR-205-5p, hsa-let-7a, hsa-miR-200c, and hsa-miR-1283 as key regulators of these transcriptomic changes.

**Conclusion:** Our findings highlighted the critical role of receptive endometrial EVs in modulating pre-implantation embryo function. Receptive endometrial EVs promote a favourable environment for pre-implanting embryos, potentially enhancing implantation success. These results offer potential therapeutic applications of endometrial EVs in assisted reproductive technologies.

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## 185. Comparative Analysis of Testicular Organoids Derived from Cryopreserved vs. Fresh Tissue for Fertility Preservation

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### Category

Sperm and testes

### Sub-Category

Basic Science

### Abstract

**Objective:** To compare the viability and functionality of testicular organoids derived from cryopreserved and fresh bovine tissue, utilizing a cryopreservation method identical to that used for prepubertal human tissue. This study aimed to investigate the potential of testicular organoids as a fertility preservation strategy for prepubertal boys undergoing cancer treatment.

**Methods:** Testicular organoids derived from either cryopreserved or fresh immature testicular tissue (n=3) were cultured for up to 56 days and analysed on days 0, 7, 14, 28, and 56. Viability assays, organoid count and area measurements, and relative gene expression analysis via rt-