

miRNAS FROM HUMAN CUMULUS CELLS AND THEIR CONTRIBUTION TO THE ACQUISITION OF THE OOCYTE DEVELOPMENTAL COMPETENCE

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BACKGROUND

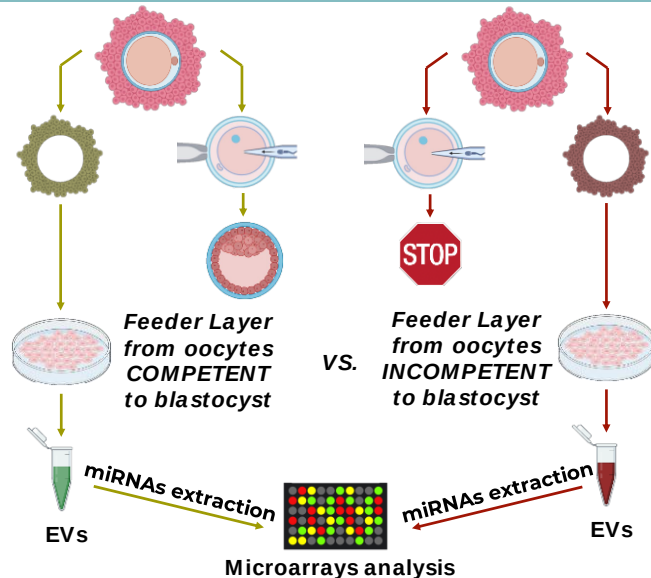
When germinal vesicle fully-grown mouse antral oocytes are cultured to the metaphase II (MII) upon a feeder layer (FL) of cumulus cells (CCs) derived from developmentally competent or incompetent oocytes, the former develop to blastocyst whereas the latter arrest development at 2-cell¹. We demonstrated that competent-FL-CCs release into the medium extracellular vesicles (EVs) containing miRNAs with a known role in the acquisition of the oocyte developmental competence².

AIM

The study aims to identify molecular factors, contained in EVs released by CCs, involved in the acquisition of developmental competence of the human oocyte.

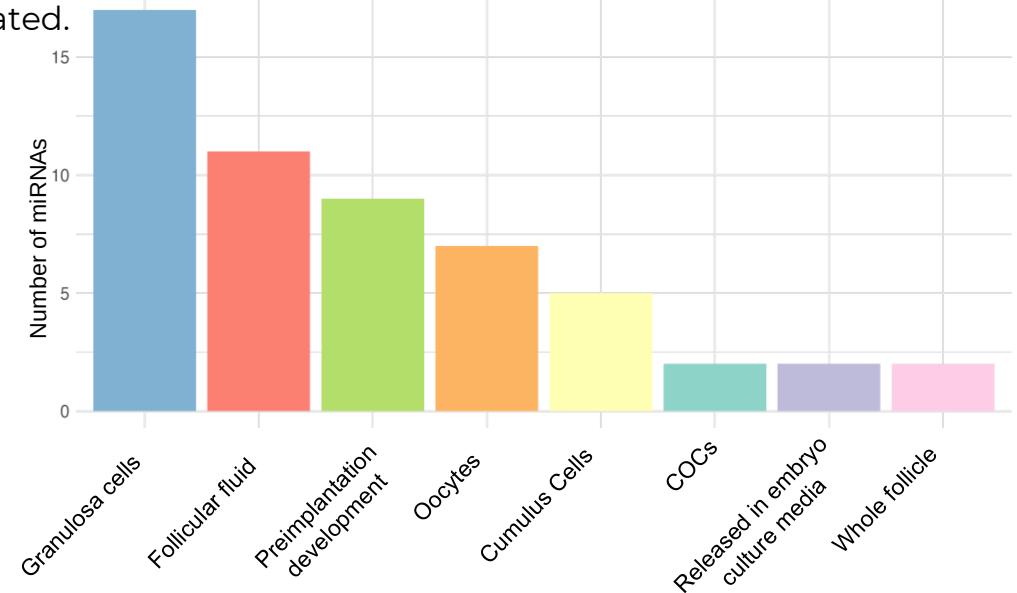
METHODS

Feeder layers of human CCs (hFL-CCs) were generated and classified according to the ability of their companion oocyte to reach the blastocyst after fertilisation (BL-hFL-CCs) or not (NoBL-hFL-CCs). At confluence, the EVs released by both hFL-CCs were isolated and their miRNA content was analysed by microarray-based transcriptome profiling (GeneChipSystem 3000).



RESULTS

When comparing the miRNA content of EVs from BL-hFL-CCs vs. NoBL-hFL-CCs, 90 miRNAs emerged as differentially expressed, 4 up- and 86 down-regulated.



CONCLUSION

Of the 90 differentially expressed miRNAs, 23 are well known to be involved in specific ovarian contexts, and some, such as miR-320d, have been linked to the developmental competence of human oocytes, suggesting their potential role in mediating the somatic contribution to the gamete developmental competence.

REFERENCES

1. Cavallera F et al. Reprod Fertil Dev. 2019; 31:1068-77.
2. Fiorentino G et al. Mol Hum Reprod. 2024; 30(6):gaae019.