



In vitro transcriptomic response of bovine oviduct epithelial cells to direct or indirect embryo contact

Meriem Hamdi¹, Beatriz Rodríguez-Alonso¹, Alexandra Almansa-Ordóñez¹, Alfonso Gutierrez-Adán¹, Pat Lonergan², Dimitrios Rizos¹

¹Department of Animal Reproduction INIA, Ctra. De la Coruña KM 5.9, 28040, Madrid, Spain

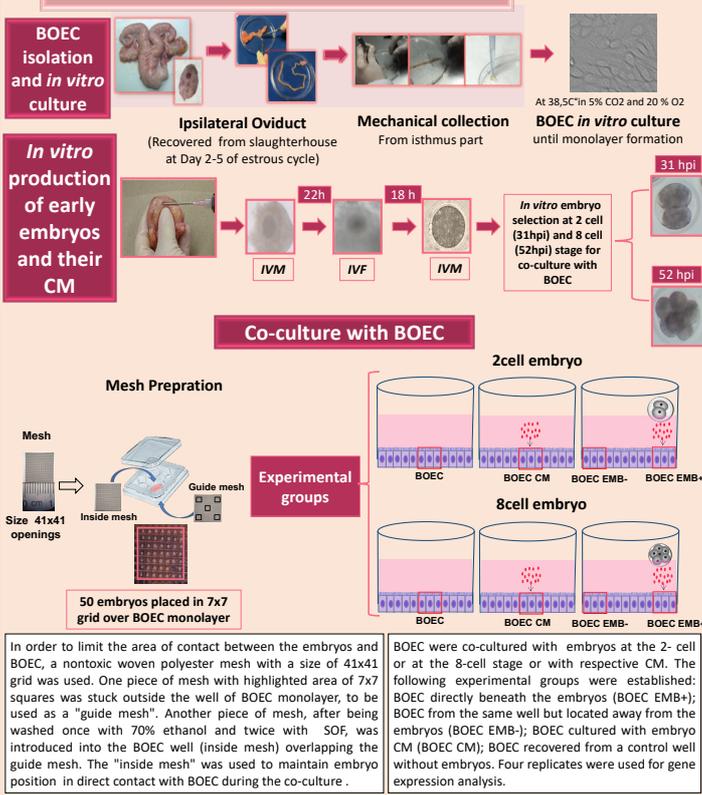
²School of Agriculture and Food Science, University College Dublin, Dublin, Ireland



Introduction

The early bovine embryo may elicit a transcriptomic change in the bovine oviduct. However such effect is likely to be very local, making it difficult to detect *in vivo*. We observed that *in vitro* transcriptomic response of bovine oviduct epithelial cells (BOEC) to the early embryo could be the result of a contact-dependent signaling effect or interactions with embryo secretions. In order to determine this, BOEC were co-cultured directly with embryos or indirectly with embryo-conditioned media (CM).

Materials and Methods



Results

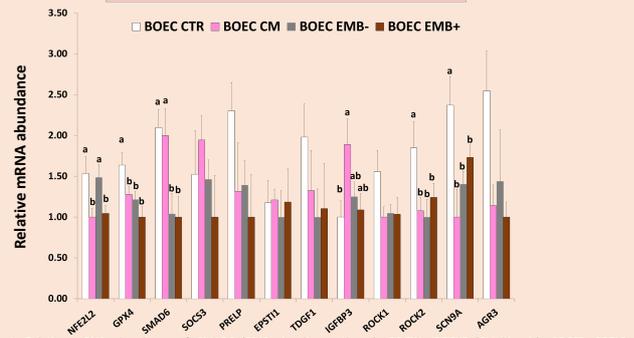


Figure 1. Relative mRNA abundance of *SMAD6* (BMP signaling pathway); *ROCK1*, *ROCK2* (Cytokinesis); *SOCS3*, *PRELP* (inflammatory response); *GPX4*, *NFE2L2* (oxidative stress); *SCN9A* (Sodium ion binding); *EPSTI1* (Tissue remodeling); *IGFBP3* (insulin-like growth factor binding); *TDGF1* (BMP signaling pathway); *AGR3* (Regulation of ciliary beating)) in BOEC co-cultured with 2 cell embryos during 48h.

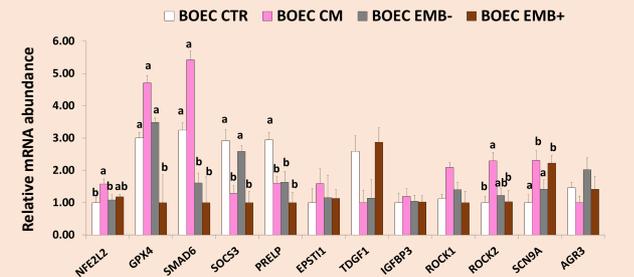


Figure 2. Relative mRNA abundance of *SMAD6* (BMP signaling pathway); *ROCK1*, *ROCK2* (Cytokinesis); *SOCS3*, *PRELP* (inflammatory response); *GPX4*, *NFE2L2* (oxidative stress); *SCN9A* (Sodium ion binding); *EPSTI1* (Tissue remodeling); *IGFBP3* (insulin-like growth factor binding); *TDGF1* (BMP signaling pathway); *AGR3* (Regulation of ciliary beating)) in BOEC co-cultured with 8 cell embryos during 48h.

^{a,b} letters in figure 1 and 2 indicate significant differences based on One Way analysis of variance (ANOVA, P<0.05)

Conclusion

In conclusion, these results provide evidence for a differential affect on the transcriptome of BOEC *in vitro* depending on embryo stage. These changes is induced either by direct contact with embryo or by embryo secretions released into the media