PW1228 - Effect of coculture of mesenchymal stem cells and murine embryonic fibroblasts on bovine embryos produced in vitro

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Due to the importance of in vitro embryo production (IVEP) to accelerate genetic improvement it is essential an endeavor in new technologies to enhance the quality and the quantity of produced embryos. Mesenchymal stem cells (MSCs) and mouse embryonic fibroblasts (MEFs) can be used as a feeder layer because their capacity to release growth factors. In the present study we investigated the effect of coculture of MSC from rat bone marrow or MEF as feeder layer during oocyte maturation and/or in vitro embryo development. Cumulus oophorus complexes were matured into three groups: control (CTRL), coculture with monolayer of mesenchymal cells (MSC) or cocultured with monolayer of embryonic fibroblasts of mice (MEF). Fertilization was performed in control condition for all groups and in vitro fertilized embryos were also cultured in control condition until fourth day. From fourth day on the embryos were cultivated in CTRL or in coculture with MSC or with MEF, so that the following groups were performed: (CTRL / CTRL) - maturation and embryo culture in CTRL conditions; (CTRL / MSC) - maturation in CTRL and embryo coculture with MSC; (CTRL / MEF) - maturation CTRL and embryo culture with MEF; (MSC / CTRL) - MSC during maturation and embryo culture in CTRL; (MSC / MSC) - maturation and embryo culture in MSC; (MEF / CTRL) - maturation with MEF and embryo culture in CTRL (MEF / MEF) - maturation and embryo culture in MEF. The statistical significance was evaluated by non-parametric Kruskal-Wallis test with Dunns post-test. No significant differences for metaphase II stage and apoptosis in oocytes were found among CTRL, MSC and MEF groups. After in vitro fertilization different assays were performed to evaluate embryo development. The cleavage rate in embryos at 4th day after the beginning of in vitro culture were not different among groups. At eight days after fertilization we observed a similar ($P > 0.05$) number of cells in the whole embryos, in the inner cell mass, in the trophoblast and at apoptotic stage from all experimental groups. The rate of blastocyst formation, expanded, hatched and the total of blastocysts did not differ among experimental groups ($P > 0.05$) at 7th and 8th days of embryo development with exception of a higher hatched blastocyst rate in the CTRL /CTRL group (14.3±1.9%) when compared to MSC/MSC group (3.6±1.4%, $P < 0.05$). Thus different from our previous data in a mouse model where we observed a beneficial effect of coculture with MSC or MEF [1], we conclude that coculture with MSC or MEF during maturation and/or embryo development did not affect the in vitro bovine embryos production. Financial Support: CNPq, FAPERJ, FAPEMIG and CAPES

[1] Jasmin, Peters VM, Spray DC, Mendez-Otero R. Effect of mesenchymal stem cells and mouse embryonic fibroblasts on the development of preimplantation mouse embryos In Vitro Cell Dev Biol Anim. 2016 Jan 7

Key words: In vitro bovine embryo production, mesenchymal stem cells, embryonic mouse fibroblasts

PW1229 - Deciphering Nucleologenesis in early mouse embryos

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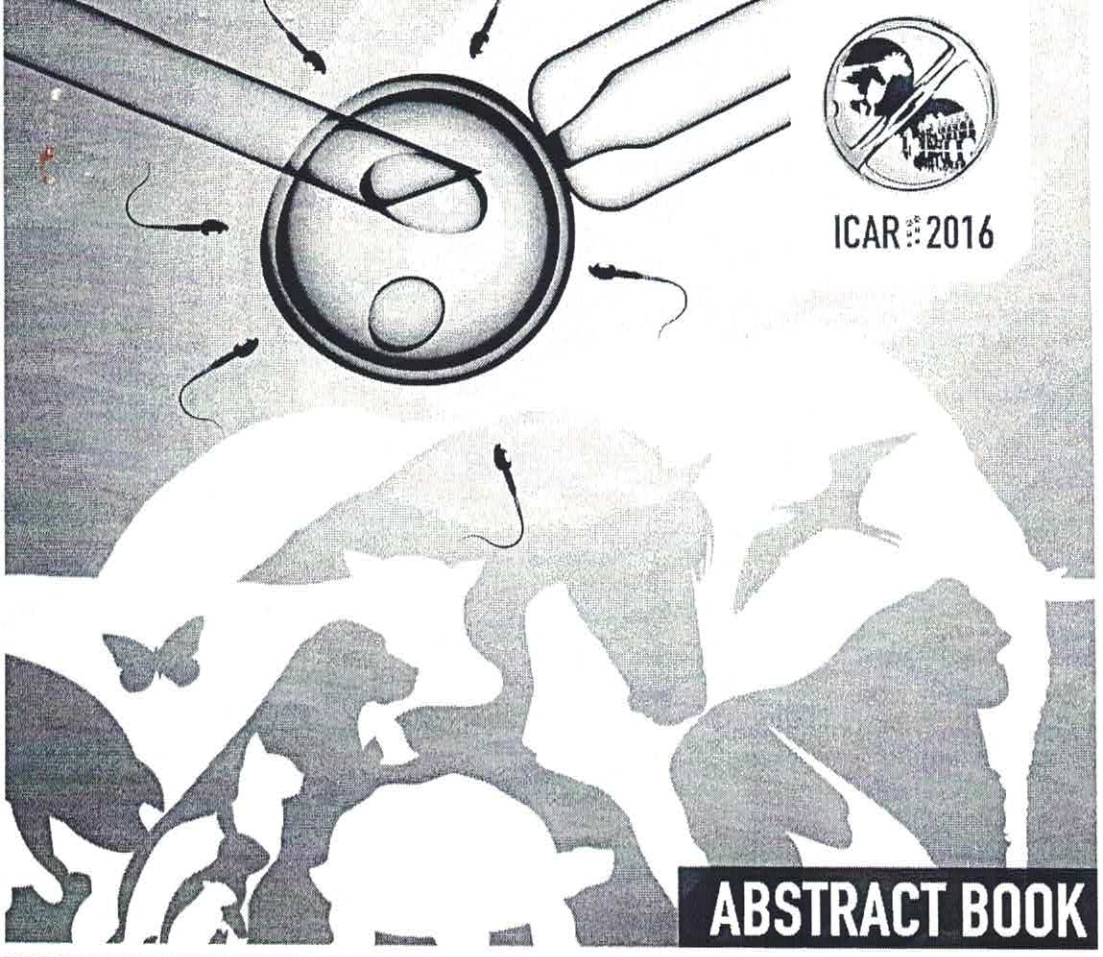
The nucleolus is a dynamic nuclear compartment that contains 3 functional compartments: fibrillar center (FC), dense fibrillar center (DFC) and granular center (GC) where different step of ribosome biogenesis occur.



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