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## Effect of estradiol and progesterone on ovine amniotic epithelial cells

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Amniotic-derived epithelial cells (AECs), an emerging source of fetal stem cells, have recently attracted the attention of researchers for their great regenerative potential. Because of their fetal origin, these cells exhibit elevated proliferation rates and plasticity, as well as, immune tolerance and anti-inflammatory properties making AECs suitable for both allogenic and xenogenic transplantation. Recently, it was demonstrated that P4 supplementation is crucial to preserve epithelial phenotype and to enhance biological properties in expanded ovine AEC (oAECs), but to date no information are present on the effects of prolonged steroid exposition on oAECs. Starting from these premise, this study was designed to clarify the Estradiol (E2) and Progesterone (P4) steroid different concentrations (12, 5 and 25 uM) effects on oAECs proliferation, stemness and differentiation, by using histological, RT-qPCR, immunohistochemistry and cell counting analysis. Results indicate that oAECs proliferate with no differences between concentrations. P4 oAECs treated cells showed the epithelial shape with cytokeratin expression until third passage, while CTR and E2 treated cells down regulate cytokeratin and increase the  $\alpha$ SMA expression protein after the first passage. Stemness genes *OCT4*, *NANOG* and *SOX2* expressions were maintained higher in 12.5  $\mu$ M E2, 25 $\mu$ M P4 and 25 $\mu$ M of both E2+P4 treated oAECs despite their progressive down-regulation in the CTR. Moreover, after 21 days of osteogenic induction in culture, steroids treated oAECs acquire chondrogenic-like morphology with alcian-blue positive stain despite the alizarin red stain positivity observed in no treated cells. In summary, prolonged steroids treatments can modify oAECs stemness properties and plasticity opening new prospective for the oAEC use in stem cell-based therapy in animal models.

### Biography

Hashimita Sanyal is pursuing her PhD and has expertise in Nano-biotechnology. Prior to working with stem cells, she had worked on projects like bruxism, biosensors for detecting the bacteria *Legionella*, nanoparticles for drug delivery and more. With her current research venture in stem cells, she wants to explore the effect of the two important female sex hormones on amniotic epithelial cells.

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