

ENDOMETRIAL STEM CELLS AND ITS TRANSLATION

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During reproductive life, the human endometrium undergoes around approximately 500 cycles of growth, breakdown and regeneration should pregnancy not be achieved. This outstanding regenerative capacity is the basis for women's cycling and its dysfunction may be involved in the etiology of pathological disorders. Therefore, the human endometrial tissue must rely on a remarkable endometrial somatic stem cells (SSC) population. Here we demonstrate the hypothesis that human endometrial side population (SP) cells correspond to somatic stem cells (Cervelló et al, PlosONE 2010). We isolated, identified and characterized the SP corresponding to the stromal and epithelial compartments using endometrial SP genes signature, immunophenotyping and characteristic telomerase pattern. We analyzed the clonogenic activity of SP cells under hypoxic conditions and the differentiation capacity *in vitro* to adipogenic and osteogenic lineages. Finally, we demonstrated the functional capability of endometrial SP to develop human endometrium after subcutaneous injection in NOD-SCID mice. To further demonstrate the concept that SP cells of human endometrium from epithelial and stromal compartments display genotypic, phenotypic and functional features of SSC we have obtained epithelial and stromal SP cell lines and replicate the results obtained in our previous work (Cervelló et al., PlosONE in press). We will discuss the potential clinical translation of these basic findings.