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PRESENTATION OF A NEW SOURCE FOR TEETH TISSUE ENGINEERING

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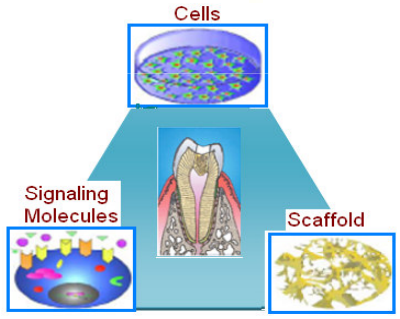
INTRODUCTION:

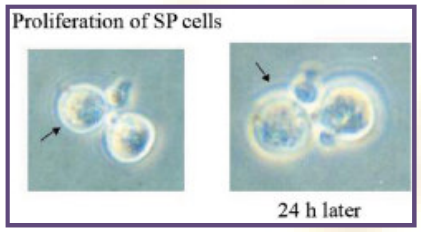
Tooth regeneration is a biological technique to solving problems of tooth loss. The detection of various stem cells in unerupted tooth buds, dental pulp or bone marrow has provided opportunities for their management in dentin-pulp repair. However, these cells types are limited by: availability, invasiveness of extraction and in some cases limited proliferative capacity. Herein we hypothesized that endometrial adult stem cells could be induced into odontoblasts.

The triad of dentin regeneration:

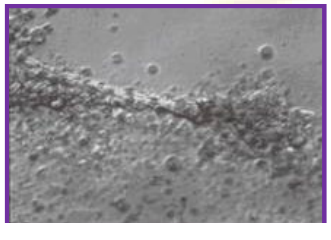


Advantages of Endometrial Stem Cells:

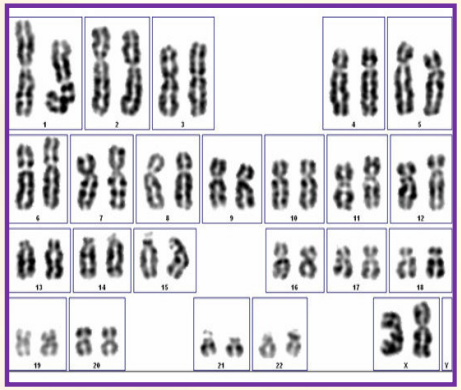
1. Human endometrium contains sidepopulati on cells[1]:



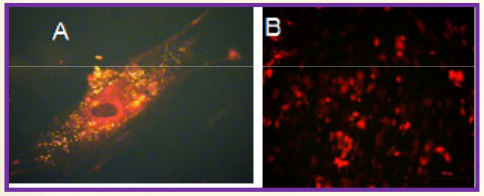
Stromal cell invasion into the fibrin matrix [2]:



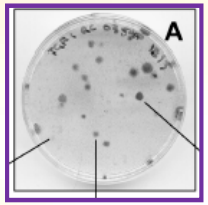
2. lack of karyotypic abnormalities and tumorogenicity [3]:



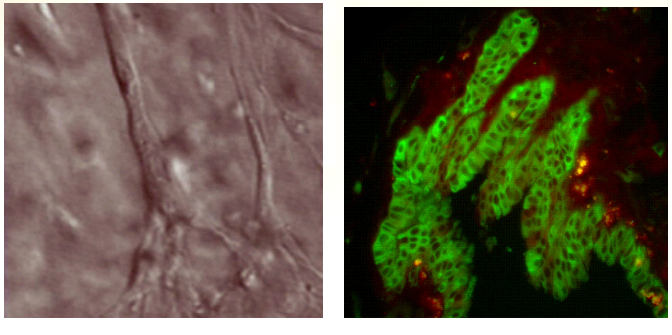
3. Pluripotent Differentiation [3]:



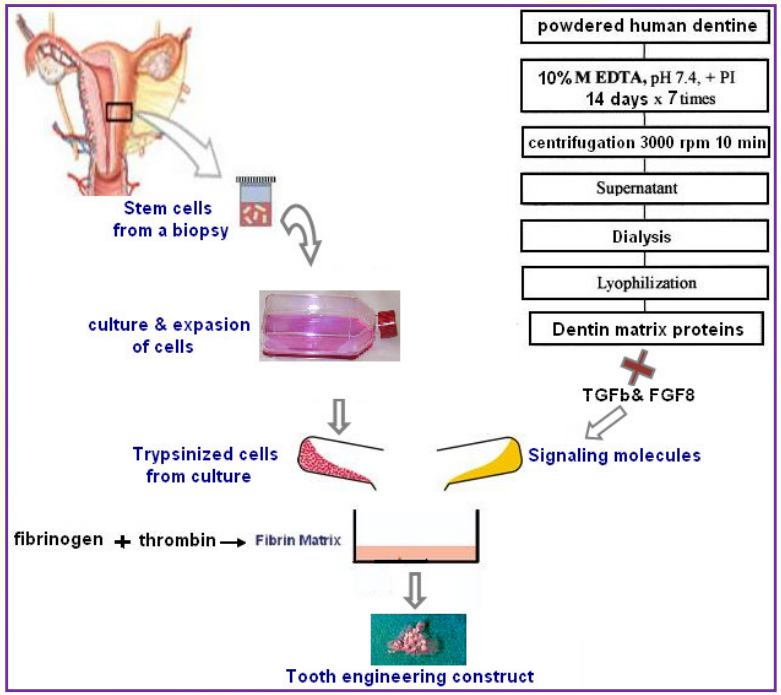
4. greater percentage of colony-forming mesenchymal cells in human endometrial stroma versus in dental pulp and bone marrow [4]:



5. Angiogenesis of human endometrial stromal cells (left) Immunohistochemistry for endometrial stromal cells using Anti-Cox2 antibody (right) [5].



OUR HYPOTHESIS:



CONCLUSIONS:

We speculate endometrial adult stem cells could improve tooth regeneration by their differentiation into odontoblast cells. The combination of endometrial adult stem cells with specific growth factors, which could enhance the differentiation of endometrial adult stem cells, might be feasible for tooth regeneration.

REFERENCES:

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[2] Ai et al, Shiraz Med J, 10 (1): 4–11, (2009).
[3] Meng et al. J. Transl. Med, 5:57, (2007).
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[5] Esfandiari, Ai et al, Am J Reprod Immunol. 57:49-54, (2007).