



Mesenchymal stem cells derived from inflamed gingival tissue for *in vivo* bone tissue engineering: preliminary results

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Among oral stem cell “niches”, **gingiva** represents an alternative source of mesenchymal stem cells (MSCs) thanks to their easy harvesting method and the excellent performances in growth and osteo-differentiation abilities.

Our purpose was investigating the ability of **gingival mesenchymal stem cells (GMSCs)** isolated from periodontally affected teeth to regenerate bone *in vivo*.

After subcutaneous inoculation of **Poly-L-Lactic acid (PLLA) scaffold** (5-20 μm micropores) pre-cellularized with GMSCs from periodontally compromised (*test group*) and healthy gingival tissue (*control group*) in presence or not of osteo-differentiation factors, by performing histological and osteo-differentiation gene expression analysis we showed that **periodontally GMSCs** has a good ability to regenerate **bone tissue *in vivo***, even if these observations need to be confirmed.

pGMSCs growth +/- osteo-differentiation factors in PLLA scaffold

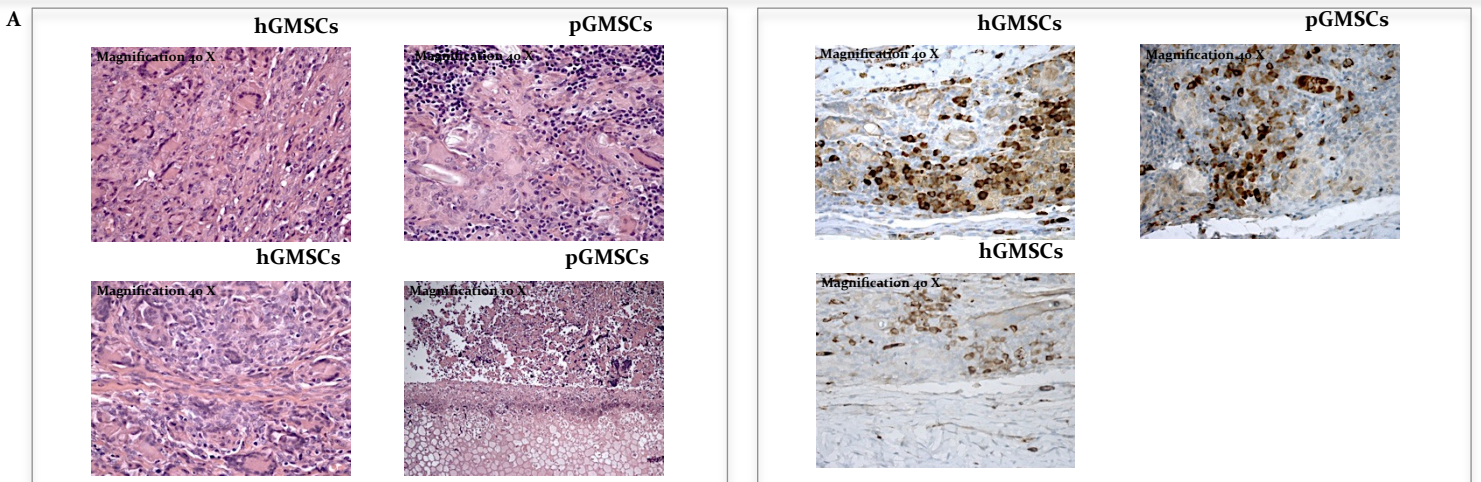
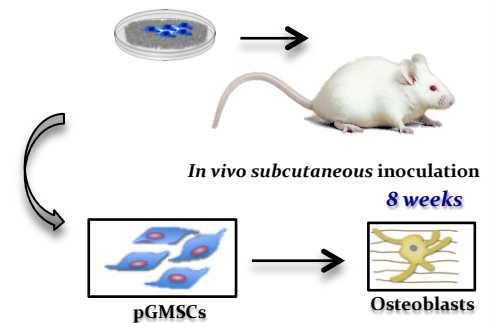


Fig. A **Hematoxylin eosin (H&E) staining** (left panel) of tissue sections derived from healthy (*control group*) and periodontally compromised tissue GMSCs (*test group*) seeded on Poly-L-Lactic acid scaffold in presence (*upper side*) or not (*lower side*) of osteo-differentiation medium.

Estrogen receptor staining (right panel) of tissue sections derived from healthy (*control group*) and periodontally compromised tissue GMSCs (*test group*) seeded on Poly-L-Lactic acid scaffold in presence (*upper side*) or not (*lower side*) of osteo-differentiation medium.

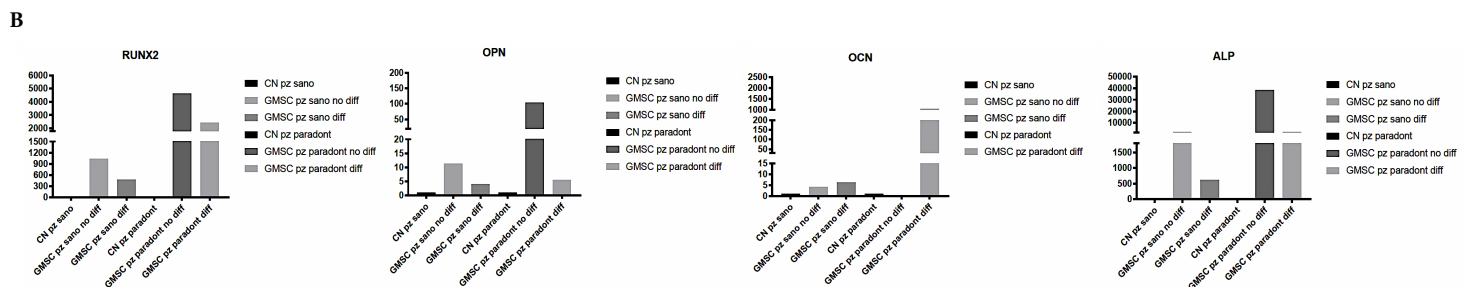


Fig. B **RT-qPCR analysis** of osteo-differentiation genes: (from left to right) **RUNX2**, **Osteopontin (OPN)**, **Osteocalcin (OCN)**, **Alkaline Phosphatase (ALP)**.

Nevertheless preliminary, these observations demonstrated that **GMSCs from periodontally compromised teeth**, usually discarded tissues, may represent a valuable stem cell source for **bone tissue engineering**.