



# Séminaire externe



## Biological diversity of mesenchymal stem cells isolated from human tissues



**M**ultipotent mesenchymal stromal/stem cells (MSC) reside in many human organs and comprise heterogeneous population of cells with self-renewal ability. These cells can be isolated from different tissues, and their morphology, immunophenotype, and differentiation potential is dependent on their tissue of origin. MSC isolated from adult human tissues are ideal candidate for tissue regeneration and tissue engineering, however, before clinical application there is a need to characterize biological properties of these cells.

Biological properties of MSC isolated from human bone marrow (BM), skeletal muscle and skin from post-operative tissues were analyzed in long-term cultures, up to 12 passages (P), performed in standard medium. Isolated MSC were examined for phenotype and differentiation potential. Adherent cells isolated from all examined tissues express phenotype characteristic for naïve MSC: CD73, CD90, CD105, however their expression downregulated during follow-up period (after P7). A fraction of MSC isolated from skeletal muscle express myogenic markers: CD56, desmin (up to P7), and dystrophin (expression increased after P7). Co-expression of CD73/CD146, CD90/CD146 and CD105/CD146 was detected on the proportion of adherent cells originated from BM, skeletal muscle and skin and this suggest that they are proangiogenic progenitors. A fraction of cells expressing CD146 strongly co-expressed PDGFR- $\alpha$ . Cells isolated from examined tissues were capable to differentiate into chondrocytes, osteoblasts and adipocytes (except MSC from skeletal muscle). Thus, MSC isolated from BM and skin biologically represent multipotent cells capable to differentiate into different type of tissue, whereas progenitor cells isolated from skeletal muscle have tissue-specific character. Post-operative tissues may serve as an alternative source of MSCs for experimental studies and for potential clinical applications.

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Salle de conférence du CBM