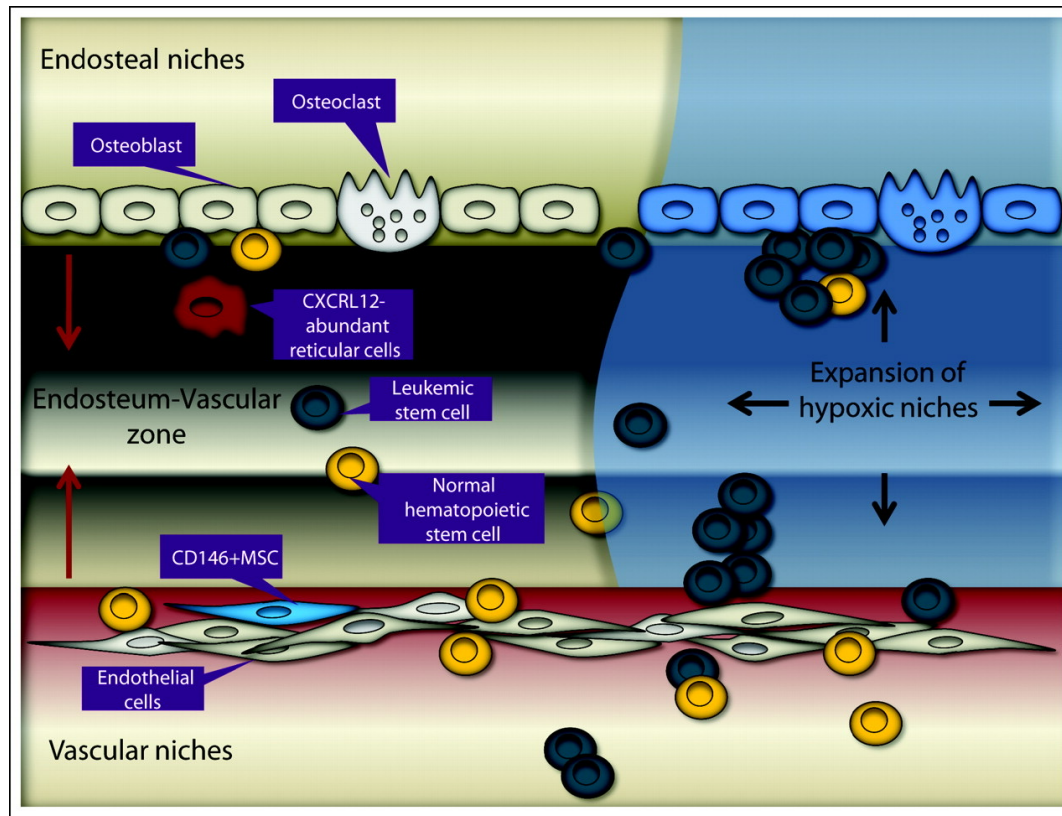
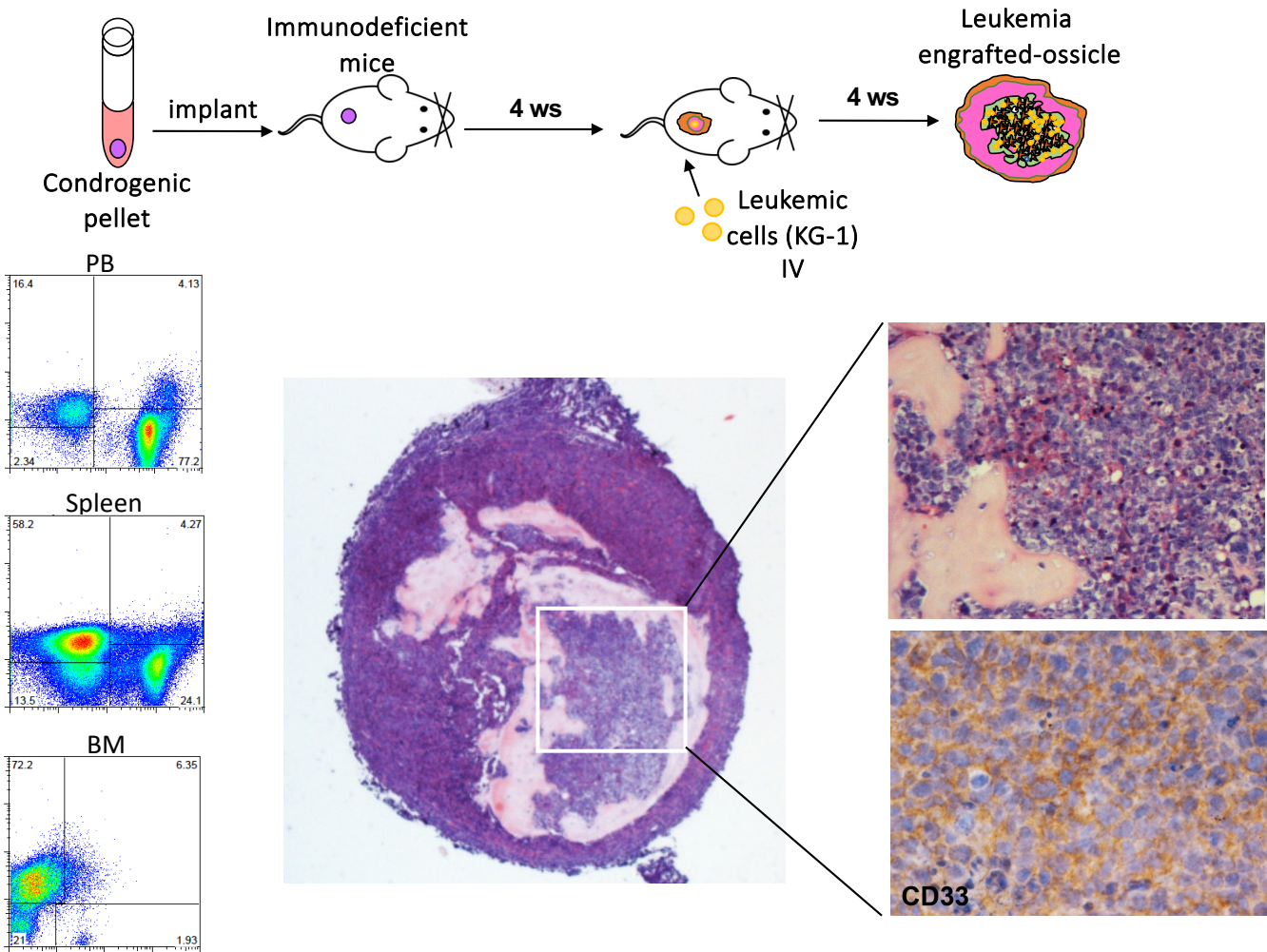


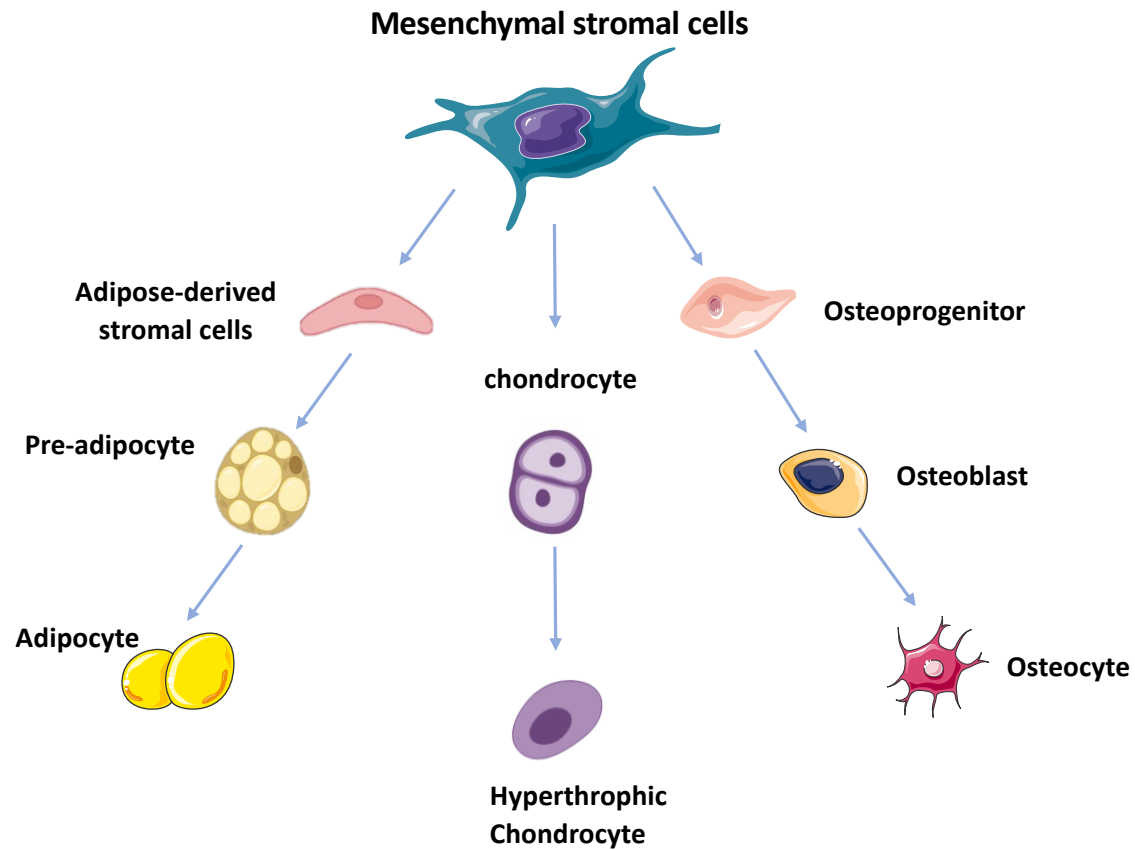
Mechanism of acute myelogenous leukemia stem cell interactions with the niche



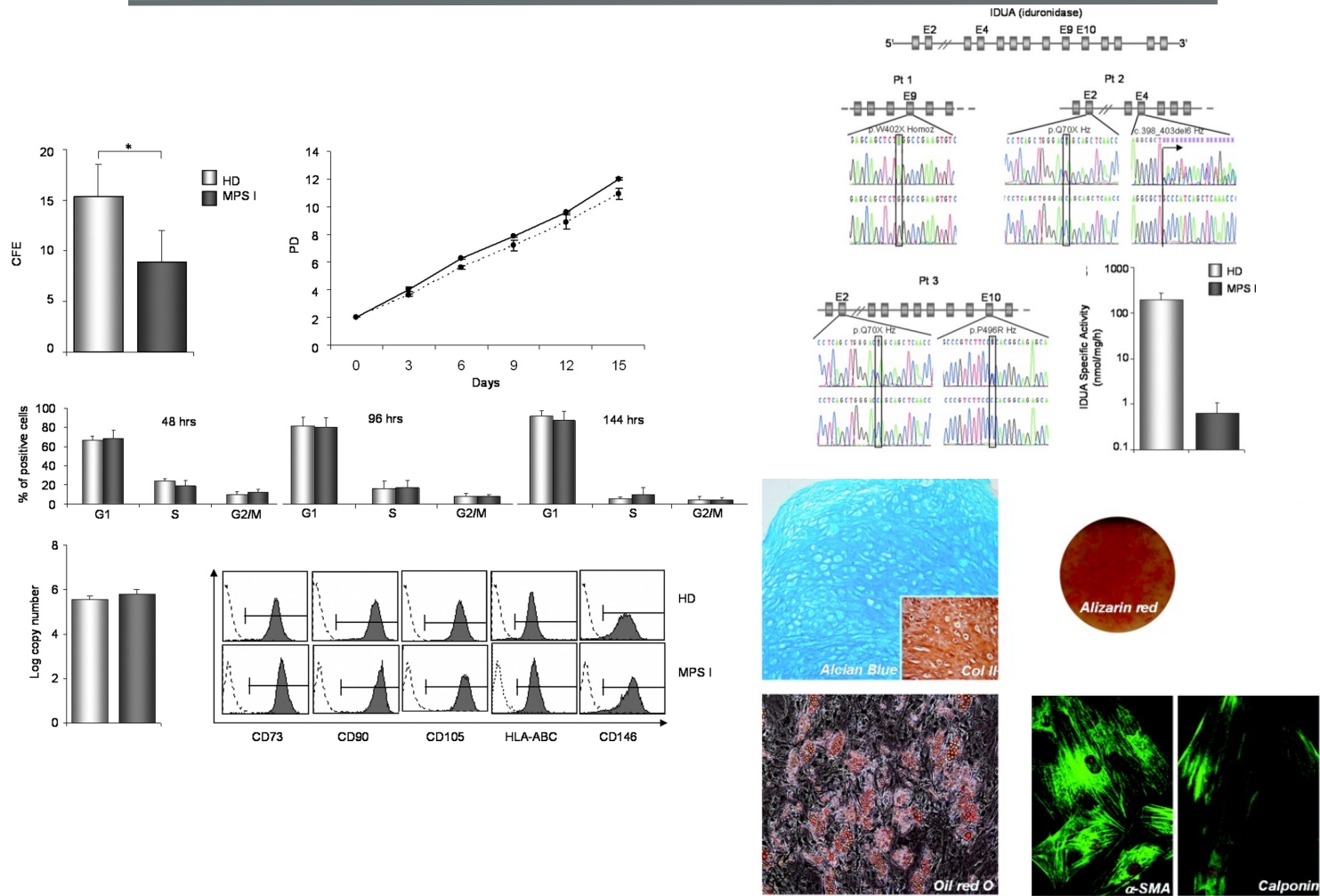
Leukemic cells engraft in the bone marrow ossicle



A tool to study skeletal defects



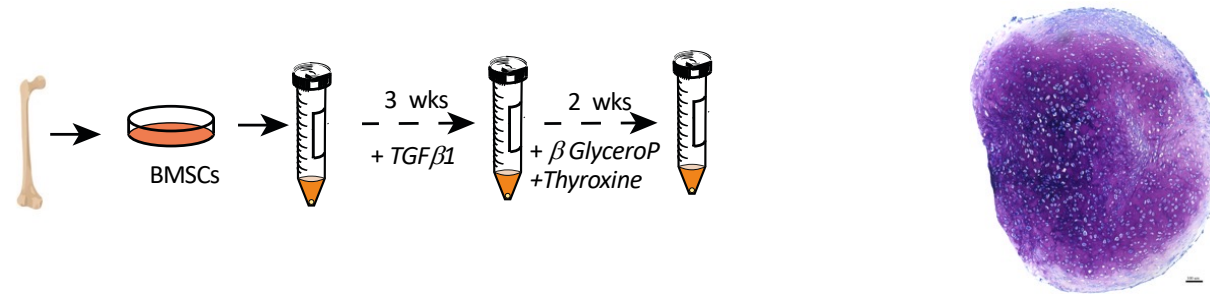
Hurler disease-derived mesenchymal stem cells



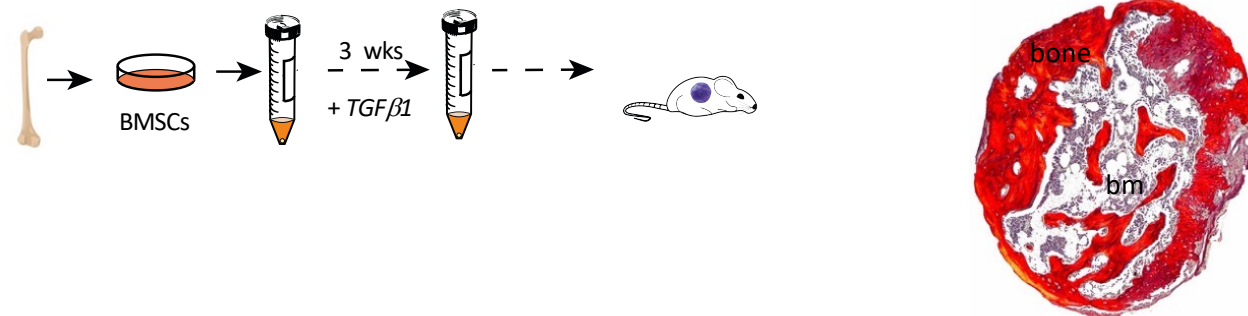
Is it possible to reproduce the skeletal phenotype of MPS with an organoid?

HD

Modello *in vitro*: differenziamento delle MSC in condrociti maturi



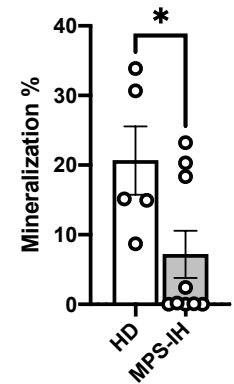
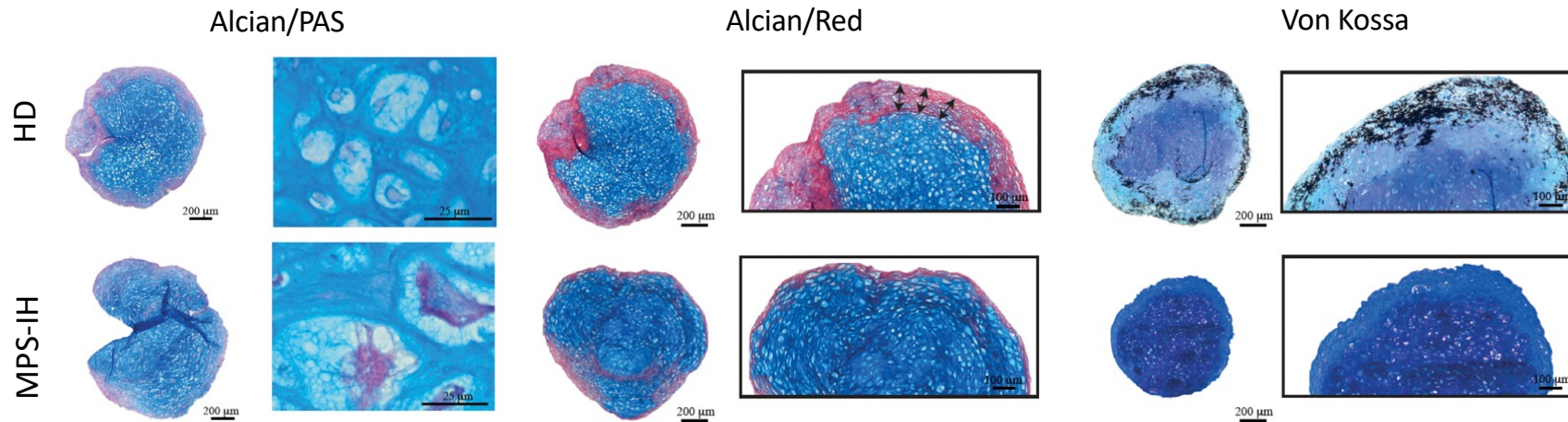
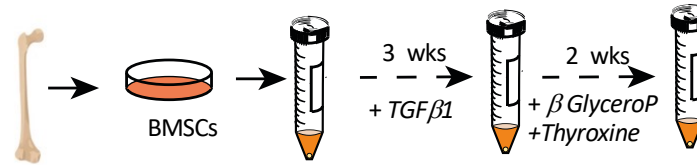
Modello *in vivo*: differenziamento delle MSC in cellule del lineage osteogenico



Donsante Pievani, manuscript in preparation

A tool to study MPS I skeletal defects (1)

MPS-IH MSCs reproduce the cartilaginous alterations of MPS-IH in vitro

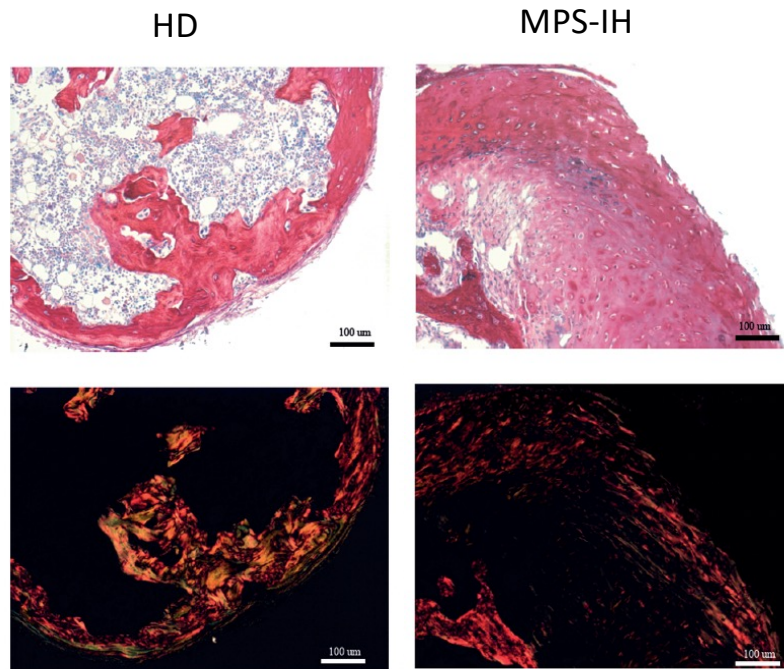
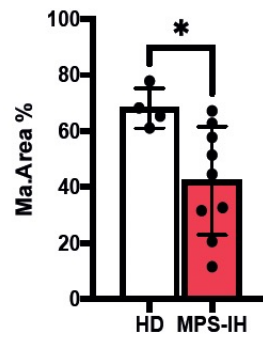
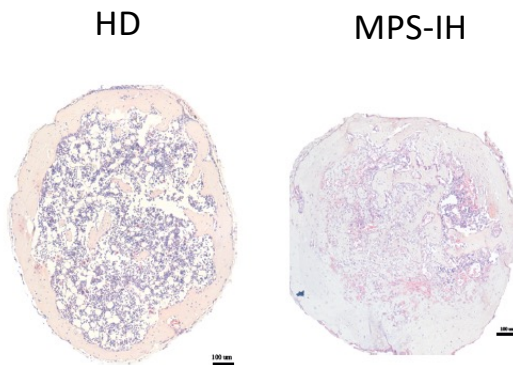
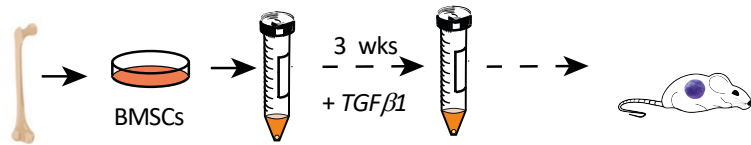


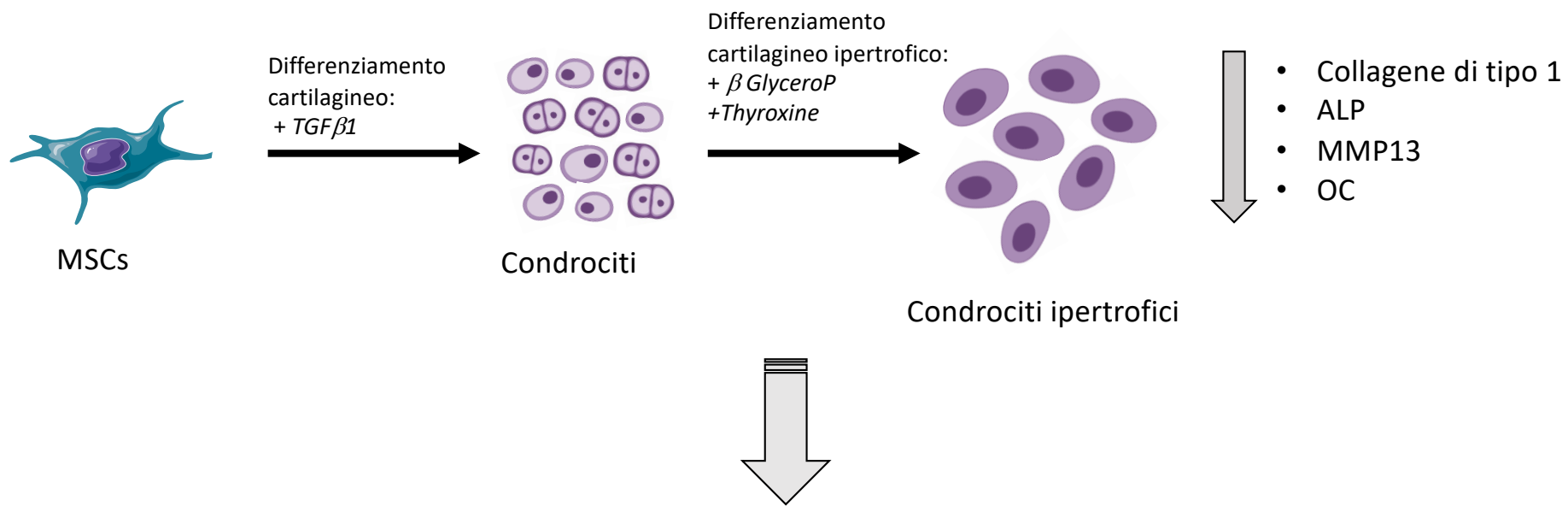
Condrociti ipertrofici
vacuolizzati

Ridotto spessore dell'anello collagenico periferico
e ridotta mineralizzazione della matrice
cartilaginea

A tool to study MPS I skeletal defects (2)

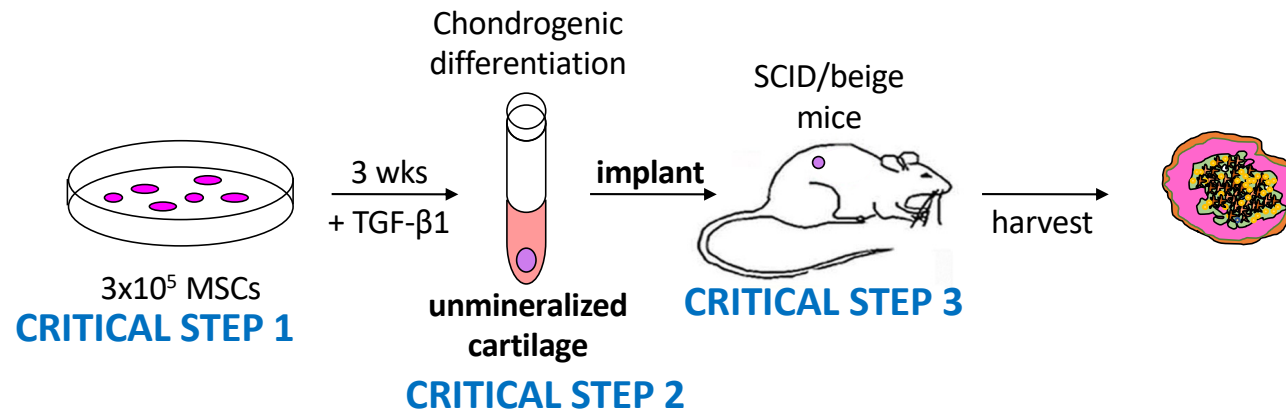
MPS-IH MSCs reproduce the skeletal alterations of MPS-IH in vivo





Altered chondrogenic matrix that is not converted to bone in vivo

Critical issues



1. Quality of cell source: source-dependent, interdonor variability, culture-dependent (confluency, early passages, no viral transduction) **! CAUTION** → Cartilage differentiation compromised
2. Cartilage pellets: quality (histology) **! CAUTION** → Pellet resorbed immediately after implant
3. Surgery: inflammation, proximity to vasculature **! CAUTION** → Ossicle resorbed; ossicle not vascularized

Applications

A tool to study...

- the mechanisms involved in normal and pathological hematopoiesis
- the mechanisms involved in normal and pathological bone formation processes
- the efficiency of drugs within the niche
- the targeting of cellular subpopulations or pathways within the niche