



Development of a functional tissue regenerative therapy by a factor to recruit mesenchymal stem cells from bone marrow

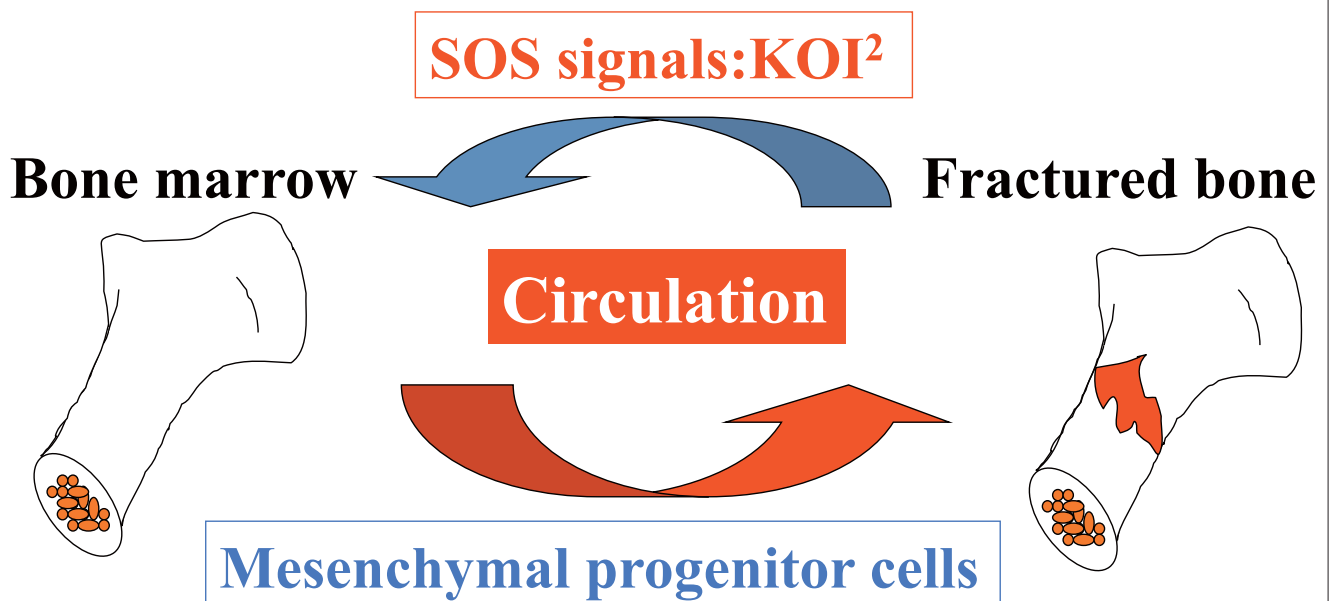
Outline

Recently, ectoderm-derived mesenchymal stem cells (EMSCs), which can differentiate not only to the mesodermal lineage cells but also to the ectodermal lineage cells such as neural and epithelial cells, have been shown to reside in bone marrow. In this study, we are now investigating physiological factors, designated as KOI², which will be released from injured tissues, mobilize EMSCs from bone marrow, and recruit EMSCs to the injured tissues. We have been identified several canonical KOI² factors, and now investigating their roles and mechanism to recruit EMSCs in the damaged tissues to induce scarless and functional tissue repair.

Expected Outcome

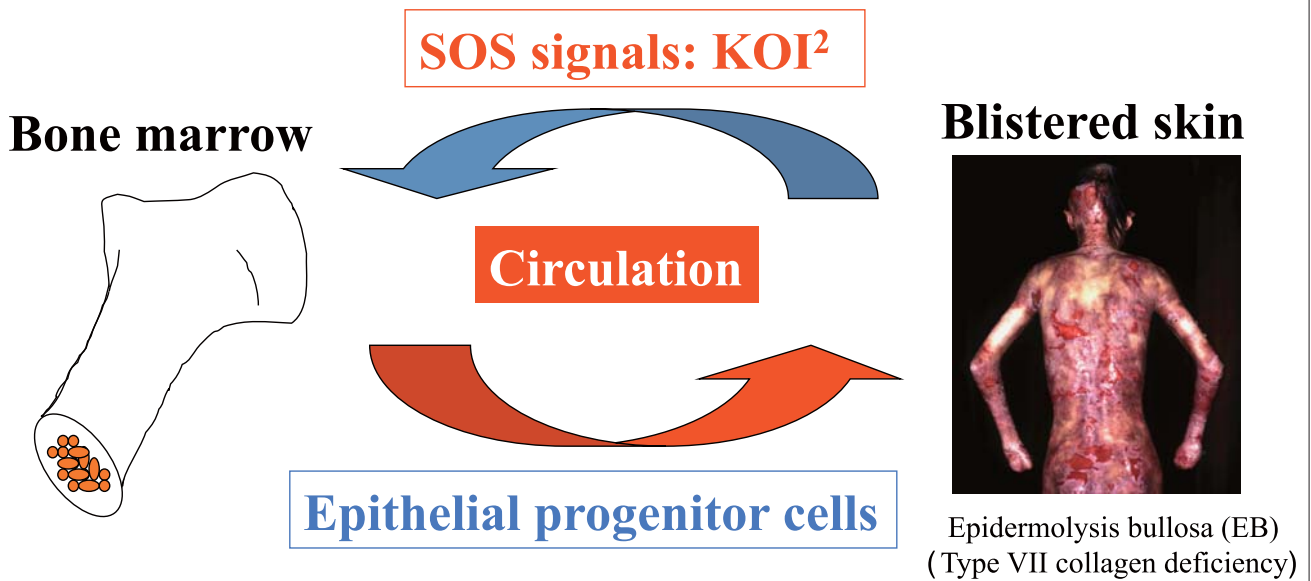
Understanding molecular mechanism of KOI² will enable us to develop a strategy for scarless and functional tissue regeneration, resulting in providing novel therapeutics for intractable tissue damages, i.e. brain and heart attack, severe burn, intractable bone fracture, and so on.

Background 1 : recruitment of mesenchymal stem/progenitor cells in the region of bone regeneration



Fractured bone releases SOS signals, by which mesenchymal stem/progenitor cells are mobilized from bone marrow to the circulation and recruited to the lesion, resulting in accelerating bone regeneration.

Background 2 : recruitment of epithelial progenitor cells in the region of skin regeneration



Blistered skin releases SOS signals, by which epithelial progenitor cells are mobilized from bone marrow to the circulation and recruited to the skin lesions, resulting in accelerating skin regeneration.

Effect of intravenous administration of KOI² for accelerating wound healing

