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## Adult stem cell aging and skeletal regenerative medicine

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Regenerative potentials of many tissues are determined by the presence and functionality of adult stem and progenitor cells which respond to exogenous cues to initiate tissue repair when needed. However, in many instances resident adult stem/precursor cells suffer declining activity in response to aging leading to reduced repair potential and chronic degenerative diseases. Human Mesenchymal Stem Cells (MSCs) have been shown to be precursors of several different cellular lineages including cartilage-forming chondrocytes and bone-forming osteoblasts. We reported that human marrow-derived MSCs show reproducible declines in proliferative and osteoblast potential with the age of the subject from whom the cells were obtained. Chemicals or drugs which modulating endogenous MSCs example PTH and Vitamin D have the potential to rejuvenate aged MSCs and to prevent or restore skeletal tissue degeneration and loss in the aging population. Tissue engineering approaches with adult stem cells have been applied clinically in cartilage and bone regeneration; however, more basic and translational researches as well as interactions between bench scientists and bedside clinicians are needed before tissue engineered biological organ replacement approaches with adult stem cells become standard clinical practice.

### Biography

Shuanhu Zhou, PhD is an Associate Scientist at Brigham and Women's Hospital and Assistant Professor at Harvard Medical School. He received his BS degree from Sichuan University, China and PhD from Hebrew University of Jerusalem, Israel, and had his postdoctoral training in Harvard University, USA. He has published more than 60 peer-reviewed papers and book chapters, and served as an evaluation expert for journals and organizations. He received several awards, including 2001 Rector Award of Hebrew University for excellent PhD student and 2006 John Haddad Young Investigator Award from American Society for Bone and Mineral Research.

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