

Special Issue on
**Advances in the Biology of Osteochondroprogenitors
and Related Skeletal System Disorders**

CALL FOR PAPERS

Osteochondroprogenitors (OCP) are a heterogenic population of precursor that arise from mesenchymal stem cells (MSC) and are capable of giving rise to either bone or cartilage cells upon proper induction *in vitro* and *in vivo*. Developmentally, OCP are placed between MSC and the terminally differentiated osteoblasts and chondrocytes, playing a critical role in both cartilage and bone formation and homeostasis. Alteration in the development and function of OCP and their derivatives can cause skeletal system disorders, such as joint deformity, chondrodysplasia, osteoarthritis and tumorigenesis, and other related skeletal system disorders. However, the molecular and cellular mechanisms that regulate the development of OCP progeny or skeletal diseases remain incompletely understood.

Differentiation and maturation of OCP into chondrocytes and osteoblasts are a dynamic, complex, and tightly regulated process. It begins by the condensation of mesenchymal progenitors in a spatiotemporal dependent manner. Upon exposure to mechanical and chemical signals, OCP begin proliferation and differentiation by activating specific chondrogenic or osteogenic programs. Over the past few years, substantial progress has been made in understanding the biology of OCP and OCP-related skeletal diseases with the application of genetic modified animals and their cellular derivatives, proteomic and epigenetic approaches, iPSC, and other novel technologies. To disseminate this novel and exciting progress, we seek original manuscripts, review articles, and clinical studies from our colleagues in the field for this special issue with focus on OCP.

Potential topics include but are not limited to the following:

- ▶ Animal models for studying cartilage degeneration, antidegeneration, and regeneration and bone mineral homeostasis
- ▶ Epigenetics that modulate chondrogenesis and osteogenesis
- ▶ Transcriptional regulation of osteogenic and chondrocytic programs
- ▶ Biomarkers of osteochondroprogenitors
- ▶ Signaling pathways that regulate viability, proliferation, and chondrocytic and osteogenic differentiation of OCP
- ▶ Sources of osteochondroprogenitors and their isolation and expansion *in vivo* and *in vitro*
- ▶ Application of iPSC in bone and cartilage regeneration and disease modeling

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/bmri/cell.biology/ocp/>.

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First Round of Reviews

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