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Stem cells in bone development, disease and regeneration

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Abstract

My laboratory asks fundamental questions about the special bone cells termed "skeletal stem cells" using mouse genetic models. Skeletal stem cells can produce a variety of bone cells with important functions in bone health and diseases. Our recent findings are beginning to unravel their unique properties: these stem cells are diverse, malleable and local in nature. For example, we have identified skeletal stem cells in the resting zone of the growth plate – these stem cells look exactly like chondrocytes that make cartilages, but acquire special characteristics of life-long self-renewal after formation of the stem cell niche. The important question is how a small number of skeletal stem cells can be maintained in adulthood. Our recent findings point to the possibility that some types of functionally dedicated mature bone cells, such as precursor cells for marrow adipocytes in the bone marrow, can transform into stem cell-like cells in response to injury and facilitate bone regeneration. In my talk, I will present our recent findings on skeletal stem cells, particularly from the perspective of in vivo lineage-tracing studies.

Bio

Noriaki Ono is an Associate Professor with tenure at the University of Texas Health Science Center at Houston School of Dentistry. His laboratory has been focusing on the fundamental biology of skeletal stem cells that play important roles in skeletal development, diseases and regeneration. The three major focuses of his laboratory are: skeletal stem cells in the growth plate cartilage, the bone marrow stromal compartment and the craniofacial skeletal structure. He completed his DDS, PhD and orthodontic training in Tokyo Medical and Dental University, Japan. He subsequently completed his research fellowship in Massachusetts General Hospital under the mentorship of Dr. Henry Kronenberg. His work on skeletal stem cells has been published in prominent journals such as Nature, Nature Communications, Elife and Journal of Bone and Mineral Research. His research program has been supported by the National Institute of Health since 2012, through K99, R00 and R01 mechanisms.



EVENT DETAILS

DATE:

Tuesday, 16 November 2021

TIME:

9am AEDT

ZOOM:

ZOOM LINK: <https://monash.zoom.us/j/89320406053?pwd=SjBnZEhLTEMOYWWRMNFIKYWt5S HFZdz09>

Meeting ID: 893 2040 6053
Passcode: 531544

HOST:

Dr Alberto Rosello-Diez



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