

SPECIAL SPEAKER

Australian Regenerative Medicine Institute

New players in osteo-innate-immune system and their unexpected roles: novel molecules for novel therapies

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Bone destructive diseases such as osteoporosis and rheumatoid arthritis (RA) are serious problems in developed countries. To avoid spine and hip fractures in elderly patients, physicians choose continued bisphosphonate therapies. Rapid progress of RA treatment has been driven by monoclonal antibody therapies. Yet, despite significant advances in the treatment of bone destruction, there is still a large unmet clinical need. Therefore, understanding the molecular basis of bone metabolism and identification of prophylactic targets are critical in the fields of geriatric medicine and rheumatology. Accumulating evidence suggested that humoral factors from the innate immune system regulate osteoclastogenesis and bone formation. The contribution of cytokines to the pathogenesis of bone destruction has been extensively characterized. In contrast, there are only few reports of anti-inflammatory factors produced by the bone metabolic system. Furthermore, there has been little progress in identifying intracellular molecules that regulate both the innate immune system and the skeletal system (so-called “osteo-innate-immunological” regulators) that could be prophylactic targets for inflammatory bone destruction. Recently, we demonstrated that Receptor activator of NF- κ B ligand (RANKL) protected mice from endotoxin shock. We also reported several new molecules that are critical osteo-innate-immunological regulators both *in vivo* and *in vitro* using gene-targeted mice. In this talk, we will focus on newly identified key molecules involved in inflammation and bone metabolism, and discuss their therapeutic potential.

Kenta Maruyama M.D., Ph.D. earned his M.D. in 2008 from Keio University School of Medicine. After postgraduate clinical training at the National hospital organization Tokyo Medical Center, he joined iFReC as a research fellow. He earned his Ph.D. from Osaka University School of Medicine in 2013 and continued his research as a JSPS post-doctoral fellow. In 2014, he became Assistant Professor at iFReC. His research focuses on bone biology, molecular-immuno-physiology, and geriatric medicine.



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TIME: 2:00 pm

VENUE: Seminar Room
Level 3
15 Innovation Walk
Monash Clayton