Our laboratory studies the interface between the skeletal and immune systems, a newly emerging area of research called “osteoimmunology”. Haematopoietic stem cells in the bone marrow give rise to both T cells which are important in inflammation and osteoclasts that regulate bone resorption. Differentiation and activation of osteoclasts from their precursors is tightly regulated by cytokines and growth factors such as receptor activator of nuclear factor kappa beta (RANKL), tumor necrosis factor (TNF) and various interleukins. Receptor engagement of these molecules results in signaling cascades and transcriptional changes that give rise to medical conditions such as rheumatoid arthritis, osteoporosis and osteopetrosis. Using in vivo gene transfer of immune cytokines IL-23 and IL-17, we have established new arthritis animal models that highlight the importance of these immune cytokines in arthritis initiation and bone homeostasis. Using in vitro assays, we continue our attempts to define the cellular and molecular mechanisms that take place in this fascinating interplay of the immune and skeletal systems.
Select Recent Publications


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