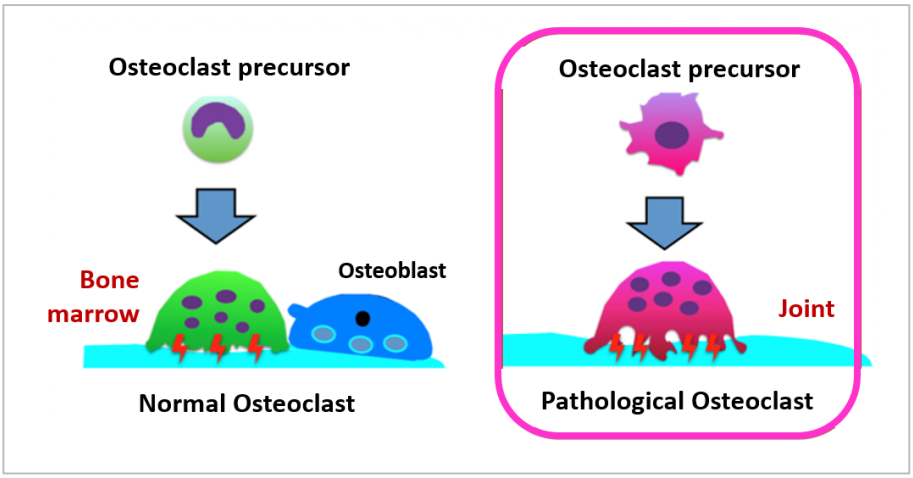
Identification of a novel arthritis-associated osteoclast precursor macrophage regulated by FoxM1

Keywords: rheumatoid arthritis, osteoclasts

Masaru Ishii (Immunology and Cell Biology, IFReC/Graduate School of Medicine, Osaka University) show osteoclasts in pannus originate exclusively from circulating bone marrow-derived cells and not from locally resident macrophages. They identify murine CX3CR1hiLy6CintF4/80+I-A+/I-E+ macrophages (termed here "arthritis-associated osteoclastogenic macrophages [AtoMs]") as the osteoclast precursor (OP)-containing population in the inflamed synovium, comprising a subset distinct from conventional OPs in homeostatic bone remodelling. Tamoxifen-inducible Foxm1 deletion suppressed the capacity of AtoMs to differentiate into osteoclasts in vitro and in vivo. Furthermore, synovial samples from human rheumatoid arthritis (RA) patients contained CX3CR1+HLA DRhiCD11c+CD80−CD86+ cells that corresponded to mouse AtoMs, and human osteoclastogenesis was inhibited by the FoxM1 inhibitor, thiostrepton, constituting a potential target for RA treatment.



Journal: *Nature Immunology* (November 19, 2019 online)

Title: "Identification of a novel arthritis-associated osteoclast precursor macrophage regulated by FoxM1"

Authors: Tetsuo Hasegawa, Junichi Kikuta, Takao Sudo, Yoshinobu Matsuura, Takahiro Matsui, Szandor Simmons, Kosuke Ebina, Makoto Hirao, Daisuke Okuzaki, Yuichi Yoshida, Atsushi Hirao, Vladimir V. Kalinichenko, Kunihiro Yamaoka, Tsutomu Takeuchi, and Masaru Ishii*

(*corresponding author)