BONE

**IL-20 BLOCKADE TO
BLOCK BONE LOSS?**

IL-20 has a key role in osteoclast differentiation, and blockade of this cytokine could represent a novel therapeutic approach for osteoporosis, according to data from Ming-Shi Chang and colleagues at the National Cheng Kung University, Taiwan, published in *The Journal of Experimental Medicine*.

“We showed previously that the anti-IL-20 monoclonal antibody 7E not only effectively ameliorated arthritis but also enhanced BMD and prevented bone destruction in the collagen-induced arthritis animal model,” explains Chang. “Therefore, we hypothesized that IL-20 might be involved in other bone diseases such as osteoporosis.”

First, the authors showed that serum levels of IL-20 were considerably higher in patients with osteoporosis or osteopenia than in healthy individuals; IL-20 serum levels were also higher in ovariectomized (OVX) mice—an established animal model of osteoporosis—than in sham-operated mice, indicating a role for IL-20 in bone resorption.

So, what effect would blockade of IL-20 have? Treatment with 7E reduced the levels of IL-20 in OVX mice and resulted in reduced levels of bone loss, increased tibial BMD and fewer osteoclasts than treatment with control IgG. Furthermore, mice lacking the full-length membrane-bound IL-20 receptor IL-20R1 had higher tibial BMD than wild-type control mice. *In vitro*, addition of 7E blocked the differentiation of osteoclasts from precursor cells in the presence of receptor activator of NFκB ligand (RANKL) and macrophage colony-stimulating factor (M-CSF).

“These findings go against conventional wisdom that M-CSF and RANKL are required and sufficient for osteoclast differentiation, and highlight the critical role for IL-20 in osteoclastogenesis and osteoporosis,” claims Chang.

Jenny Buckland

Original article Hsu, Y. H. *et al.* Anti-IL-20 monoclonal antibody inhibits the differentiation of osteoclasts and protects against osteoporotic bone loss. *J. Exp. Med.* doi:10.1084/jem.20102234