Ctsk-Cre mouse

Gene/Protein Targets: Cre recombinase under the Ctsk promoter.

Relevance: Cre under Ctsk promoter enabling inducible recombinase expression only in mature osteoclast. The Ctsk-Cre mouse is particularly useful for knockout studies on osteoclast (osteoclast-specific Ctsk knockout).

Model Type: Conditional Knockout Models

Genetic Background: C57Bl/6

Zygosity: Homozygous

Disease Keywords: Osteoporosis

References:

1. Chiu WS, McManus JF, Notini AJ, Cassady AI, Zajac JD, Davey RA.Transgenic mice that express Cre recombinase in osteoclasts. Genesis. 2004 Jul; 39(3):178-85.
2. Okamoto M, Murai J, Imai Y, Ikegami D, Kamiya N, Kato S, Mishina Y, Yoshikawa H, Tsumaki N.Conditional deletion of Bmpr1a in differentiated osteoclasts increases osteoblastic bone formation, increasing volume of remodeling bone in mice. J Bone Miner Res. 2011 Oct; 26(10):2511-22.
3. Winkeler CL, Kladney RD, Maggi LB Jr, Weber JD.Cathepsin K-Cre causes unexpected germline deletion of genes in mice. PLoS One. 2012;7(7):e42005.doi:10.1371/journal. pone. 0042005. Epub 2012 Jul 31.

Notes: The Ctsk-Cre mouse carrying the Cre recombinase gene driven by cathepsin K (Ctsk, about 5 kb) promoters and Cre expression is seen only in osteoclasts. Ctsk-Cre transgenic mouse line was characterized by breeding with LacZ ROSA 26 (R26R) reporter mice and immunohistochemistry for Cre recombinase. The Cre transgene was functional in all lines, with Cre-mediated recombination occurring primarily in the long bones, vertebrae, ribs, and calvaria. This transgenic mouse line can enable the deletion of floxed target genes in osteoclasts, which can be valuable tools for studying the regulation of osteoclast function.