



Supplementary Figure S1: The effects of TGF- β signaling on osteoclast induction and osteolysis. (A) Length of osteolysis in the cranial bone of the control group. (B) Less osteolysis in the of R1- Ki treatment group. (C) Quantitative analysis of the degree of osteolysis. (D) A large number of osteoclasts was detected by Tartrate-Resistant Acid Phosphatase (TRAP) staining in the control group. Black triangle indicate osteoclast. (E) Fewer osteoclasts were detected in the R1- Ki treatment group. Black triangle indicate osteoclast. (F) Quantitative analysis of the induction of osteoclasts. **, ***: $p < 0.01$, $p < 0.001$ versus Con and Control groups.



Supplementary Figure S2: Confirmation of the expression of *p*-SMAD1/5 and SMAD1/5. Expression of *p*-SMAD1/5 and SMAD1/5 was confirmed by the extracts from BMP-4 treated HeLa cells and untreated HeLa cells, respectively.