

Figure S1. Identification of autoantibodies in the serum of axSpA using human proteome (HuProt) microarrays. (A) Venn diagram indicates the numbers of autoantibodies identified from the patients with axSpA and HCs. (B) Representative images of the autoantibody detected in the HuProt microarrays. The arrows indicate the duplicate spots of the antigen protein. (C) High magnification (magnification, x5) images of the seven specific autoantibodies (including ASAP, BCL7A, EIF2C1, IGHG1, MYLK, SUGT1 and Kaiso) identified in patients with axSpA. ASAP, microtubule associated protein 9; BCL7A, BAF chromatin remodeling complex subunit BCL7A; EIF2C1, argonaute RISC component 1; IGHG1, immunoglobulin heavy constant γ 1 (G1m marker); MYLK, myosin light chain kinase; SUGT1, SGT1 homolog, MIS12 kinetochore complex assembly cochaperone; HC, healthy control; axSpA, Axial spondyloarthritis.

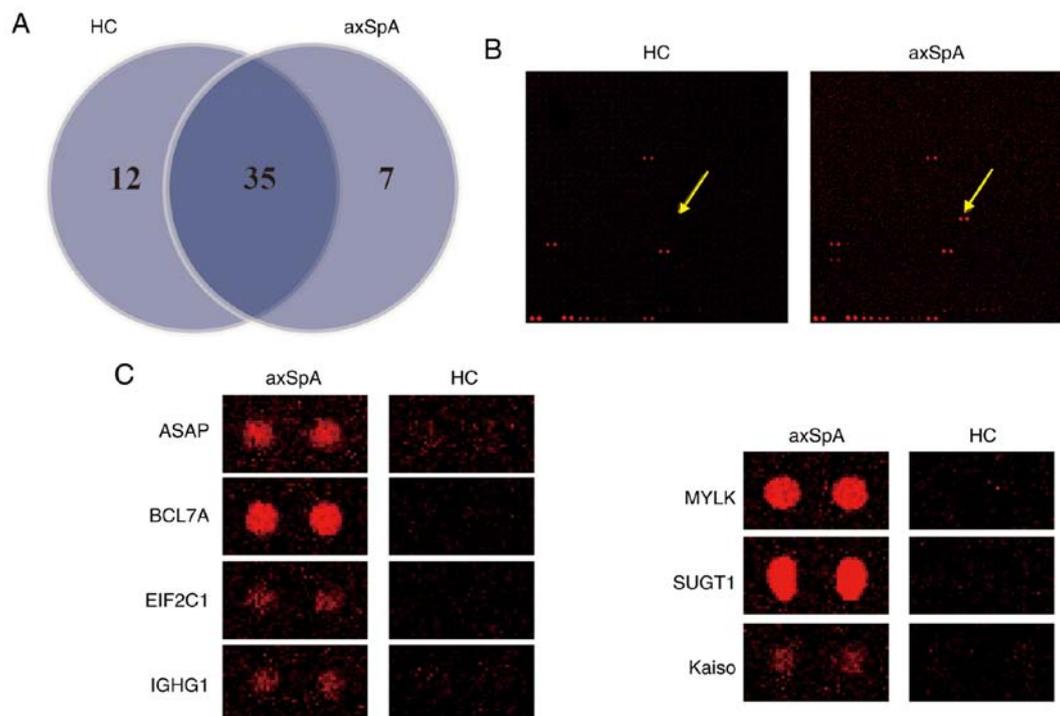


Figure S2. Role of Kaiso in osteogenic differentiation of human BMSCs. (A) Kaiso expression during osteogenic induction was determined via western blot analysis. (B) Kaiso expression in BMSCs after treatment with siRNA targeting Kaiso was determined via western blot analyses. (C) Reverse transcription-quantitative PCR analysis of ALP, OCN and BSP expression levels in BMSCs after treatment with siRNA targeting Kaiso. Data are presented the mean \pm SD (n=3). **P<0.01. BMSCs, bone marrow-derived mesenchymal stem cells; ALP, alkaline phosphatase; OCN, osteocalcin; BSP, bone sialoprotein; Ctr, control; OM, osteogenic medium; siRNA, small interfering RNA.

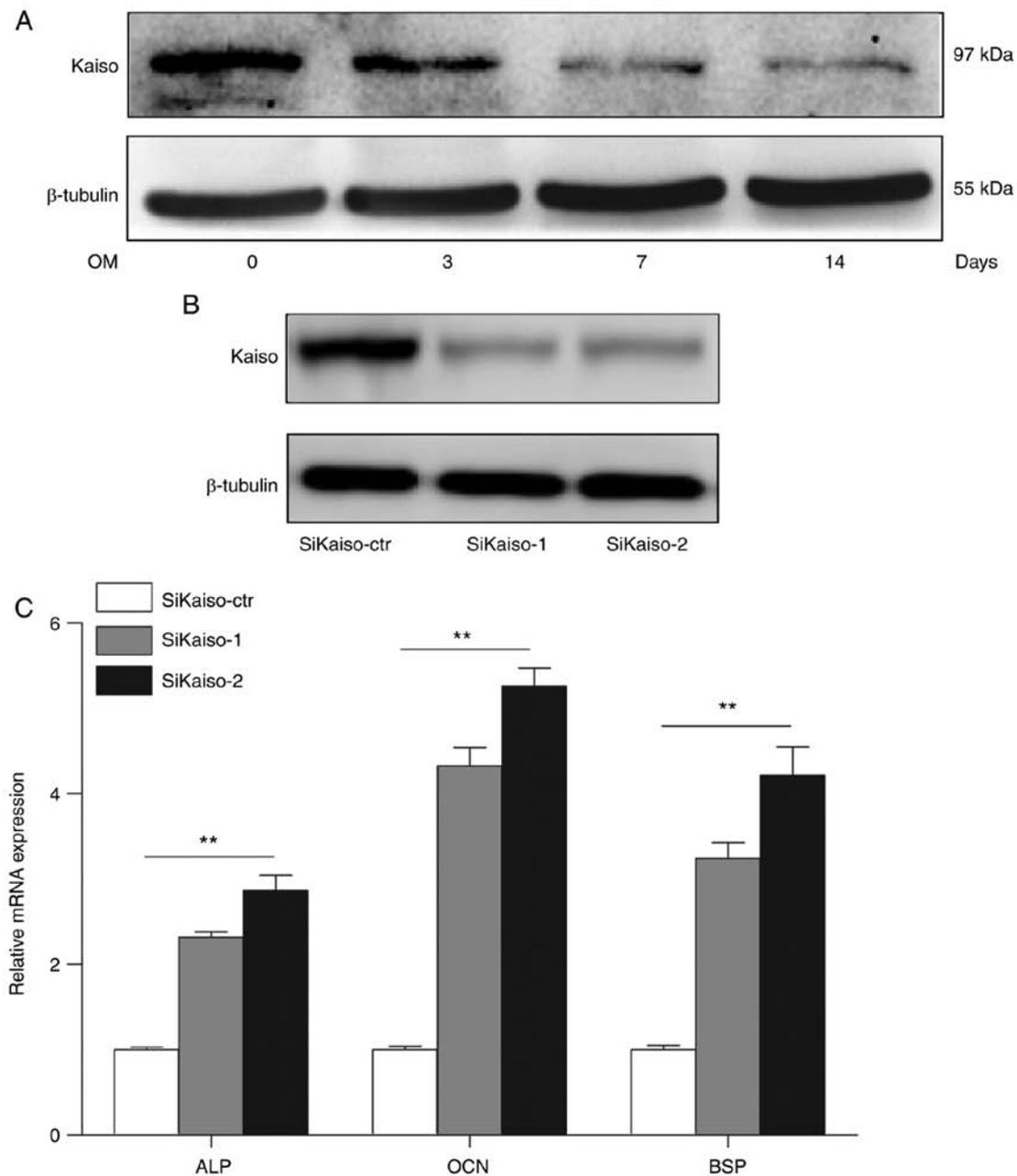


Figure S3. Expression levels of p85 and p-AKT in different groups were determined via densitometry using ImageJ software and normalized with the loading control β -tubulin. (A) Expression of p85 in LV-ctr and LV-Kaiso; (B) expression of p85 in Sh-ctr, Sh-Kaiso-1, Sh-ctr + LY and Sh-Kaiso-1 + LY; (C) expression of p-AKT in LV-ctr and LV-Kaiso; (D) expression of p-AKT in Sh-ctr, Sh-Kaiso-1, Sh-ctr + LY and Sh-Kaiso-1 + LY. ** $P < 0.01$. LV, lentivirus; Ctr, control; p-, phosphorylated; shRNA, short hairpin RNA; LY, LY294002.

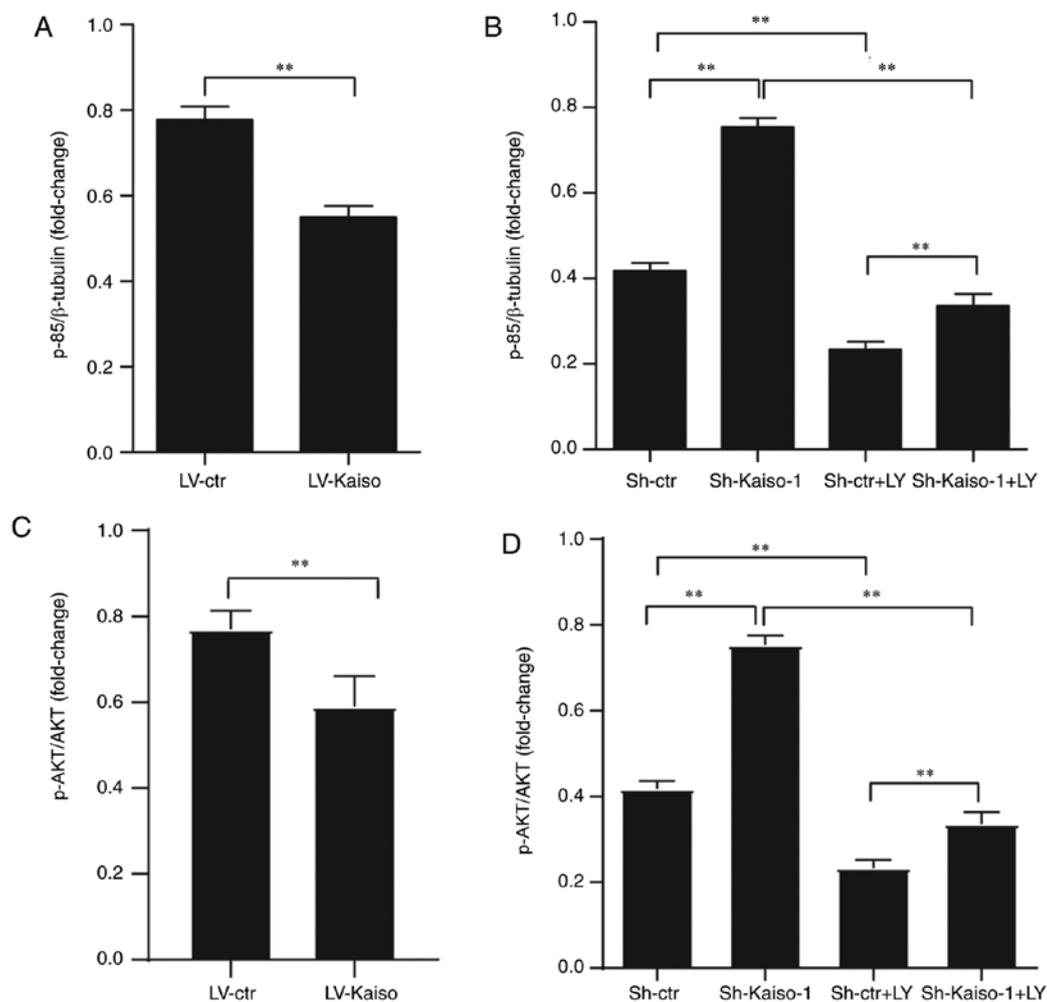


Figure S4. Expression of Itga10 in MC3T3-E1 cells after transfection with Sh-Itga10 or LV-Itga10. (A) The expression of Itga10 in Sh-Itga10-1 and Sh-Itga10-2 transfected cells was determined via western blot analyses. (B) The expression of Itga10 in LV-Itga10 transfected cells was determined via western blot analyses. (C) The expression of Itga10 in Sh-Itga10-1 and Sh-Itga10-2 transfected cells was determined using reverse transcription-quantitative PCR. (D) The expression of Itga10 in LV-Itga10 transfected cells was determined using reverse transcription-quantitative PCR. Data are presented the mean \pm SD (n=3). **P<0.01. LV, lentivirus; Ctr, control; shRNA, short hairpin RNA; Itga10, integrin subunit α 10.

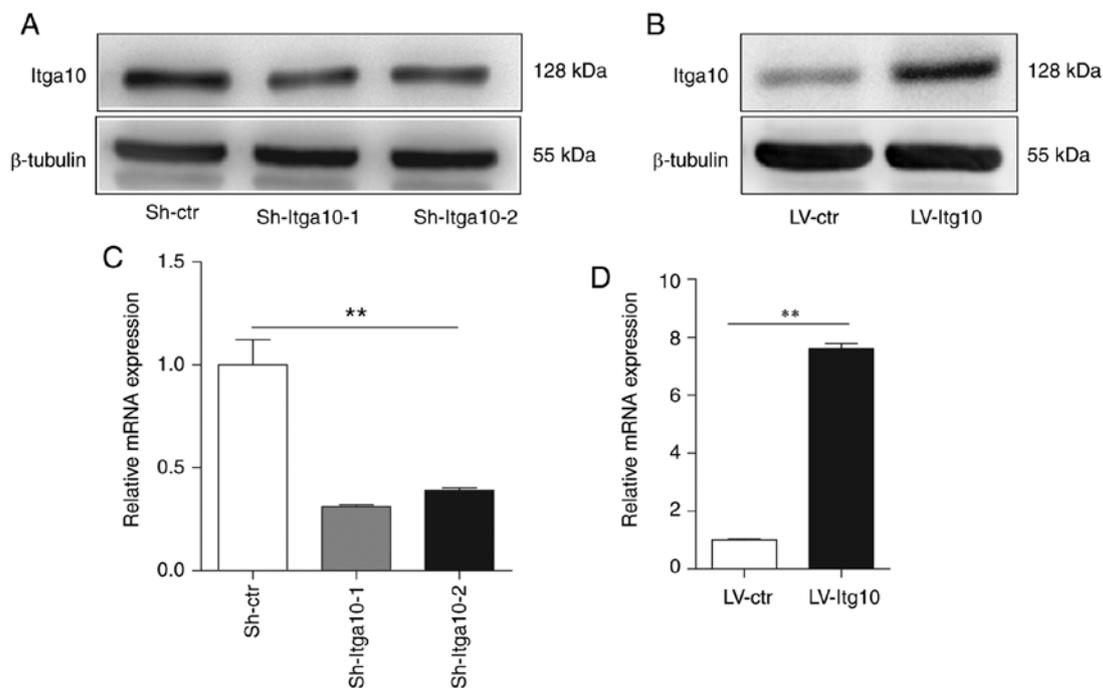


Figure S5. Overexpression of Itga10 alleviates the osteoblast inhibitory effects observed in Kaiso stably transfected cells. (A) Reverse transcription-quantitative PCR analysis of Itga10, ALP, OCN and BSP expression levels was performed in LV-Ctr, LV-Kaiso, LV-Itga10 and LV-Kaiso + Itga10 transfected MC3T3-E1 cells after 7 days culture with osteogenic medium. (B) ALP activity was measured on day 1, 3, 5 and 7 after culture with osteogenic medium. The results are presented as the value relative to that at day 1. (C) ALP staining was performed on day 7, and Alizarin red staining was performed on day 21. All the data were confirmed using three repeated tests. Data are presented as the mean \pm SD. All P-values are based on one-way ANOVA. *P<0.05 and **P<0.01. LV, lentivirus; Ctr, control; Itga10, integrin subunit α 10; ALP, alkaline phosphatase; OCN, osteocalcin; BSP, bone sialoprotein.

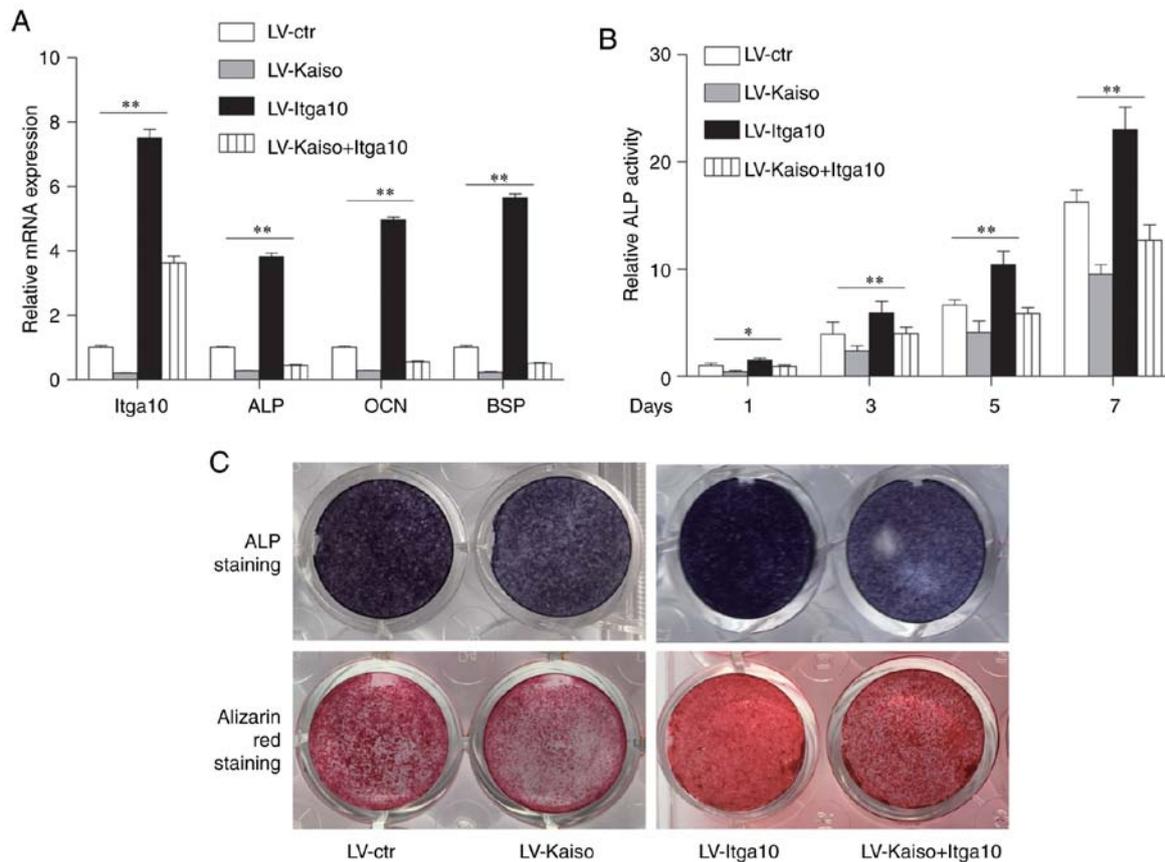


Table SI. Sequences used for knockdown of Kaiso and Itga10 in mouse MC3T3-E1 cells and human bone marrow-derived mesenchymal stem cells.

Name/species	5'→3'
Sh-ctr for mouse	CCGGTTCTCCGAACGTGTCACGTTTCAAGAGAACGTGACACGTTCCGGAGAATTTTTTG
Sh-Kaiso-1 for mouse	CCGGGCTACAGACATTCAGTACTCTCTCGAGAGAGTACTGAATGTCTGTAGCTTTTTTG
Sh-Kaiso-2 for mouse	CCGGGGCAGTTACTAGGCGTGAAATCTCGAGAGAGTACTGAATGTCTGTAGCTTTTTTG
SiKaiso-ctr for human	UUCUCCGAACGUGUCACGUTT
SiKaiso-1 for human	GGCAAACAAACGTATGAAAGT
SiKaiso-2 for human	GTTCAATCCTCCGAGTACTGT
Sh-ctr for mouse	CCGGTTCTCCGAACGTGTCACGTTTCAAGAGAACGTGACACGTTCCGGAGAATTTTTTG
Sh-Itga10-1 for mouse	CCGGGATTGCGGTCCCTTGGTCACTACTCGAGAGAGTACTGAATGTCTGTAGCTTTTTTG
Sh-Itga10-2 for mouse	CCGGGGACGGAATAACTAATATCTTCTCGAGAGAGTACTGAATGTCTGTAGCTTTTTTG

shRNA, short hairpin RNA; siRNA, small interfering RNA; Ctr, control; Itga10, integrin subunit α 10.

Table SII. Sequences of primers for reverse transcription-quantitative PCR.

Gene	Forward sequence (5'→3')	Reverse sequence (5'→3')
β-actin	AAGATCAAGATCATTGCTCCTCCT	AGCTCAGTAACAGTCCGCCT
Kaiso	TCGAAGGCTTGTCAACTGGT	CTTGTTTGGTGGCTCACTGC
ALP	CCAACCTCTTTTGTGCCAGAGA	GGCTACATTGGTGTGAGCTTTT
OCN	CTTGGCCCAGACCTAGCAG	CTGGGCTTGGCATCTGTGA
BSP	ATGGAGACGGCGATAGTTCC	CTAGCTGTTACACCCGAGAGT
Itga10	CGCTGTCCCACATACATGGAT	CAGCCTCCGAAGGAAAGTCT

Itga10, integrin subunit α 10; ALP, alkaline phosphatase; OCN, osteocalcin; BSP, bone sialoprotein.