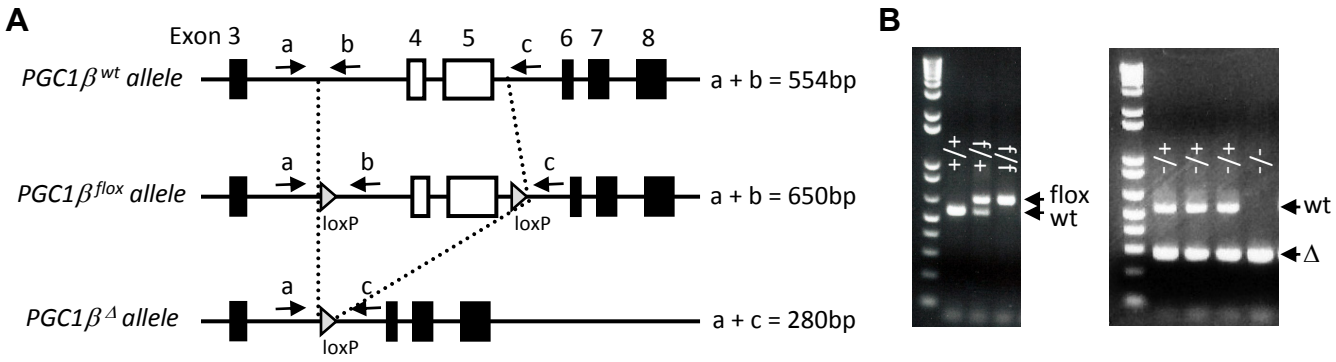

Figure S1. PGC1β flox Mice
(A) A schematic diagram illustrating the design of PGC1β flox mice and genotyping strategy. In the PGC1βflox allele, exon 4 and 5 were flanked by loxP recombination sites44 and were deleted in cells that expressed the Cre recombinase, resulting in the conversion of the PGC1βflox allele to a PGC1β null allele (PGC1βΔ).
(B) A multiplex PCR strategy to determine the genotype at the PGC1β locus in mice: f indicates flox allele; + indicates wt allele; - indicates null allele (Δ).

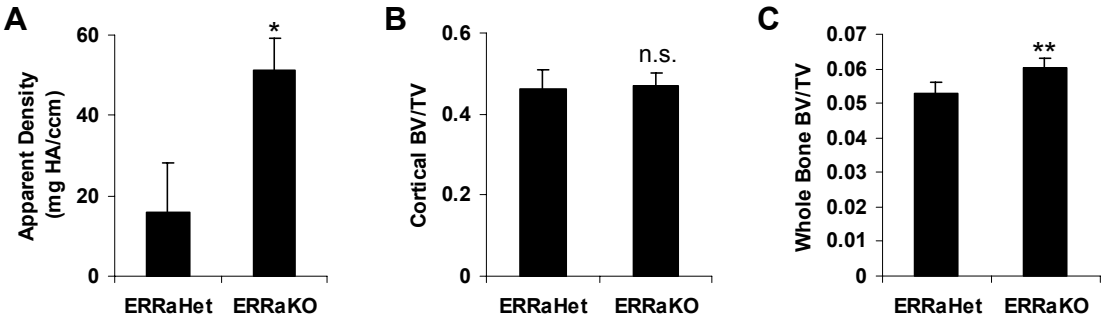

Figure S2. MicroCT Analysis of the Tibiae From ERRα KO Mice
Tibiae were collected from ERRαKOs or littermate ERRαHet controls (10-12 month old, male, n=4), scanned by μCT35 for both overall assessment (at 14 micron resolution) and the structural analysis of trabecular and cortical bone (at 7 micron resolution).
(A) The apparent density of the trabecular bone was increased in the ERRαKOs, confirming the greater trabecular BV/TV in these mice.
(B) The BV/TV of the cortical bone was not significantly altered.
(C) The BV/TV of the entire tibia was significantly increased in the ERRαKOs, confirming an overall greater bone volume. Statistical significance is designated as *, $p<0.05$; **, $p<0.01$; n.s., non-significant ($p>0.05$) .

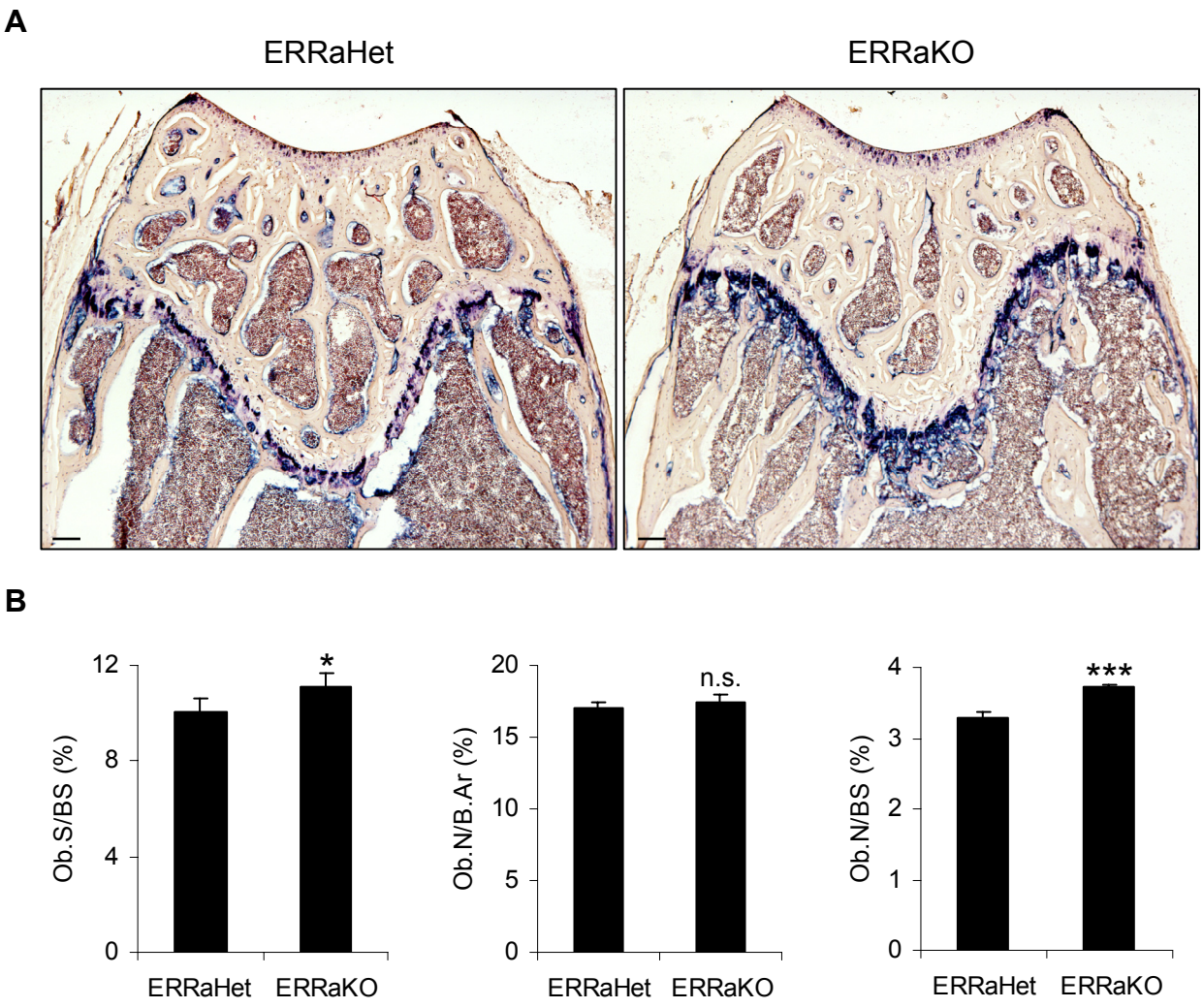

Figure S3. ERRα Deletion Resulted in Increased Osteoblast Surface and Number
Histomorphometric analysis of ERRα KO mice and littermate ERRα Het control mice (n=4, 10-12 months old, male).
(A) Representative images of alkaline phosphatase (ALP)-stained femoral sections. Osteoblasts were identified as blue cells at bone and marrow boundary. Scale bar, 100μm.
(B) Quantification of osteoblast surface (Ob.S/BS) and osteoblast number (Ob.N/B.Ar and Ob.N/BS). BS, bone surface; B.Ar, bone area. Statistical significance is designated as *, $p<0.05$; ***, $p<0.005$; n.s., non-significant ($p>0.05$).

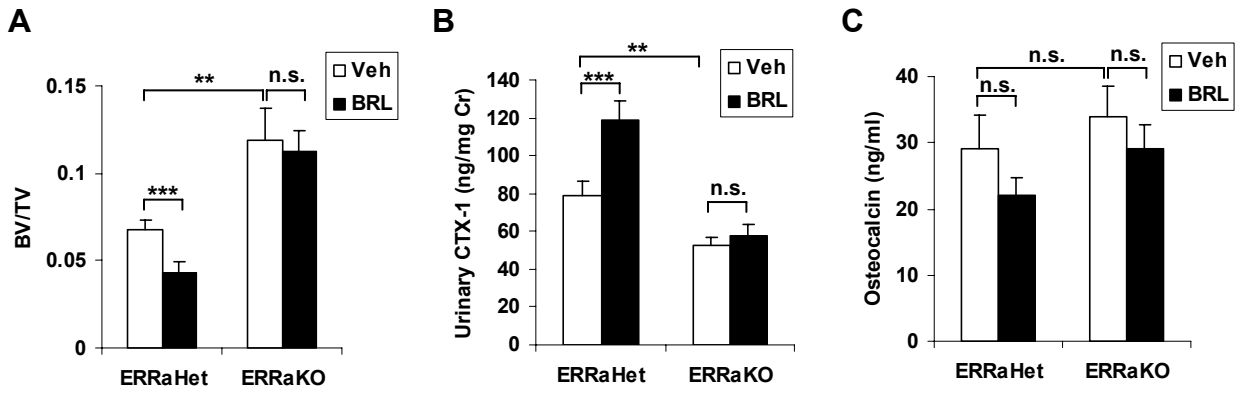

Figure S4. Rosiglitazone-induced bone loss was severely diminished in ERRα KO mice.
ERRαKO mice and ERRαHet controls (9-month-old, male) were treated with BRL (10mg/kg/day) or vehicle daily by oral gavage for 8 weeks (n=3). Statistical significance is designated as *, $p<0.05$; **, $p<0.01$; ***, $p<0.005$; n.s., non-significant ($p>0.05$).
(A) Trabecular BV/TV (bone volume/tissue volume ratio).
(B) Urinary concentration of a bone resorption marker CTX-1 (normalized to urinary creatinine concentration).
(C) Serum concentration of a bone formation marker osteocalcin.

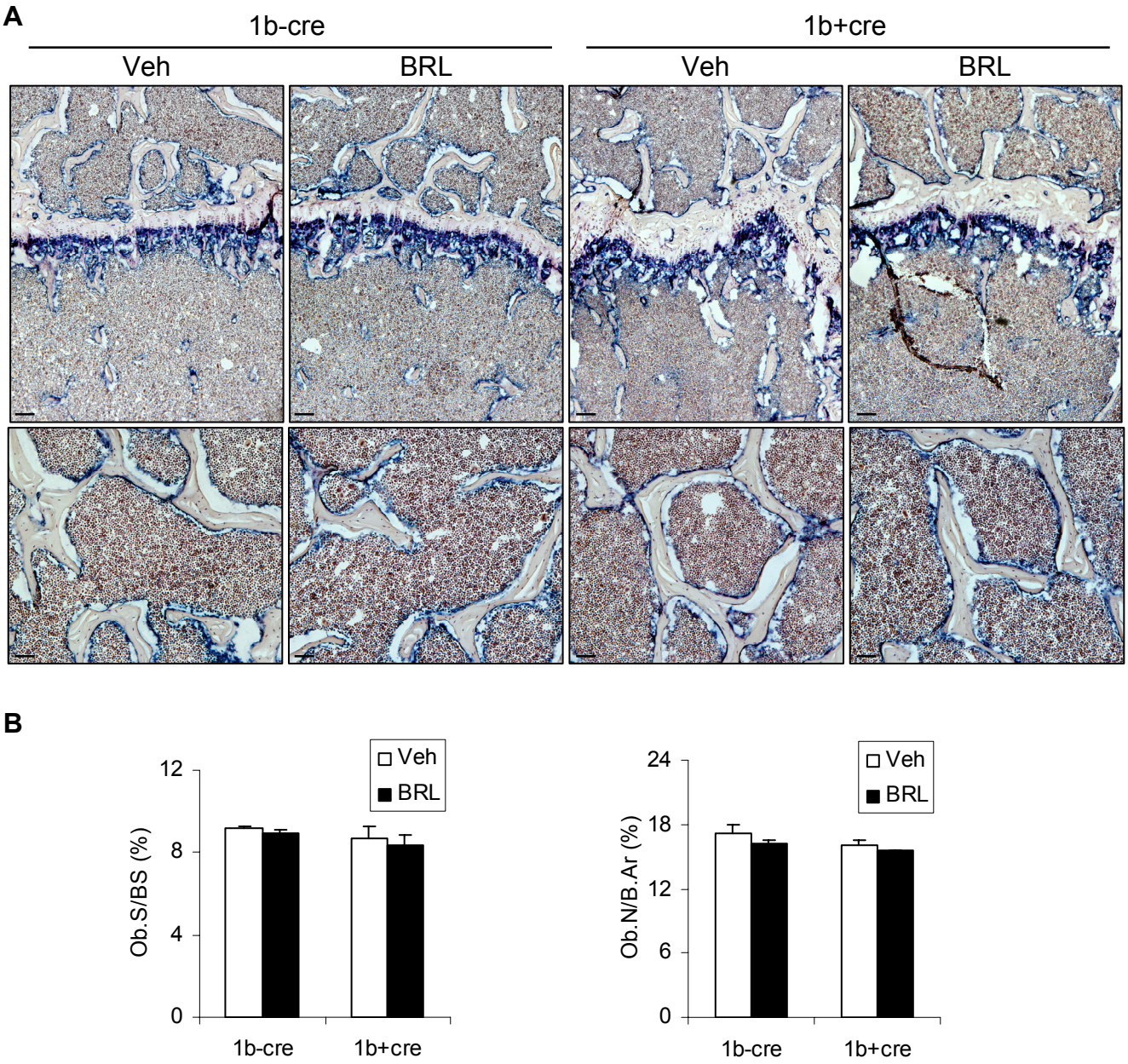

Figure S5. Osteoclastic PGC1β Deletion Did Not Significantly Alter Osteoblast Number or Surface
PGC1βf/fTie2cre mutant mice (1b+cre) and PGC1βf/f littermate control mice (1b-cre) (8-month-old, male) were treated with BRL at 10mg/kg/day or vehicle daily by oral gavage for 8 weeks (n=4 or 5 in each group).
(A) Representative images of alkaline phosphatas (ALP)-stained femoral sections. Osteoblasts were identified as the blue cells at the bone and marrow boundary. Top, lower magnification (4x, scale bar, 100μm); bottom, higher magnification (10x, scale bar, 40μm).
(B) Quantification of osteoblast surface (Ob.S/BS) and osteoblast number (Ob.N/B.Ar). BS, bone surface; B.Ar, bone area. All differences were statistically non-significant (p>0.05).