



**Supplementary Figure 1.**

(A) Body weight (g) at days 0, 7 and 14 for wild type (WT) and *Sost*<sup>-/-</sup> mice from the unloading study.

(B) Percent body weight change from day 0 for WT and *Sost*<sup>-/-</sup> mice, and percent BMD (DXA) change from day 0 for control and unloaded WT and *Sost*<sup>-/-</sup> tibiae.

(C) Body weight (g) at days 0, 7 and 14 for WT and *Sost*<sup>-/-</sup> mice from the strain matched (1200µe) loading study.

(D) Percent body weight change from day 0 for WT and *Sost*<sup>-/-</sup> mice, and percent BMD (DXA) change from day 0 for control and strain-matched (1200-e) loaded WT and *Sost*<sup>-/-</sup> tibiae.