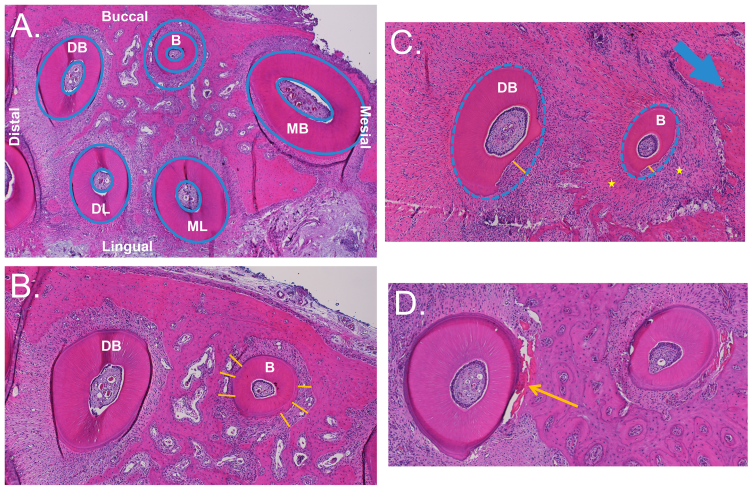

Supplementary Fig. 1. Histomorphometry methods for quantitative analyses of tooth roots and periodontal ligament tissues. Methodology used for histomorphometry of H&E stained axial sections. **A)** The pulp and dentin of each of the five roots of the maxillary first molar along with the periodontal ligament space (PDL) of the buccal (B) root are outlined. **B)** Three linear measurements of the width of the PDL were taken from the mesial/compression and distal/tension sides of the PDL and then averaged for each animal. PDL blood vessels were also counted (examples indicated by yellow stars). **C)** If root resorption had occurred, the original shape of the root was estimated and outlined. The differences in the area between the original outline and resorbed outline were calculated to determine the total area of root resorption. Furthermore, at the worst area of resorption, a linear measurement was made from the estimated original root surface to the resorbed surface to establish the depth of resorption. Note: in sections with tooth movement, the PDL space was often undefined and characterized as such. **D)** Necrotic areas of tissue were identified as hyalinization (yellow arrow points to an incidence of hyalinization).

Supplementary Fig. 2. Linear regression demonstrates strong positive relationship between amount of tooth movement and amount of root resorption. A) When all experimental groups were included, the R^2 value for dentin width resorption of the buccal root was 0.43 mm ($p<0.001$). **B)** When all experimental groups were included, the R^2 value for dentin width resorption of the distobuccal root was 0.71 mm ($p<0.001$).