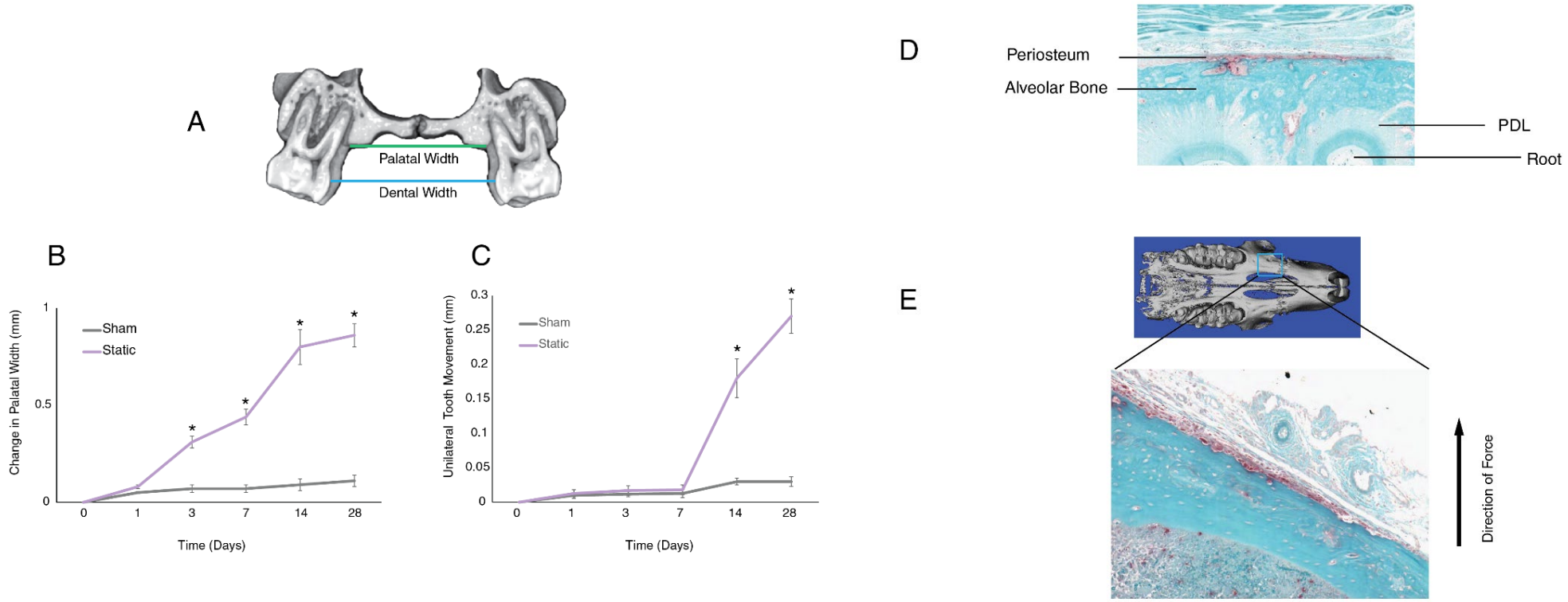

Figure 3: Increase in osteoclasts in periosteum follows palatal width increase but precedes tooth movement. Palatal width and dental width of the maxilla were measured using micro CT 3D reconstructed images, and sections at the level of the mid-coronal plane of the maxillary second molar. Green line shows the width of palate (distance between the palatal walls at the level of intersection between palate and alveolar walls), and blue line shows the dental width (distance between height of contour of second molars) (A). The palatal widths were measured over time in both Static and Sham maxillae (B). Unilateral tooth movement was measured as described in Materials & Methods section at different time points (C). Data expressed as the mean ± SD of distances in mm. Each number represents the average of 5 samples. * Static group significantly different from sham, $p<0.05$. Histological section of periosteum in the area of second molar at day 7 shows osteoclasts activation in the periosteum ahead of tooth movement and before tooth reach the surface of cortical bone (D). Trap staining of the hemimaxilla in non-tooth bearing area midway between posterior teeth and anterior teeth demonstrates osteoclasts activation in periosteum and bone, in response to transverse forces applied to posterior teeth. Black arrows illustrate the direction of force (E).