

**Additional file.4.** Quantitative assay of IHC staining positive cells and structural parameters of subchondral bone by  $\mu$ CT. (A.) percentages of MMP13, (B.) type X collagen (COL X)-positive chondrocytes in articular cartilage and (C.) Osterix positive cells in the tibial subchondral region. n= 5 per group. (D.) Tb.Th. and (E.) SMI. in subchondral bone determined by  $\mu$ CT. n= 10 per group. \*\*\*p<0.001, \*\*p<0.01, compare to the WT OA 4 week.

