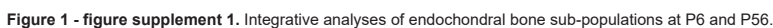


**A**



(A), heatmap showing the signature genes of the 8 cell clusters in the P6 sample. Both the top 25 signature and certain key signature genes were listed. WPRE: Woodchuck Hepatitis Virus (WHV) Posttranscriptional Regulatory Element. (B-D) Gene Ontology analysis of significant cellular processes involved in Pre-HCs(B), HCs(C) and Immature-Obs(D). Refer to Figure 1 -- Source data 1 for full list. (E), A histogram showing the expression level of tdTomato and WPRE per cell. An optimal cutoff at WPRE>14, above which a cell was considered HC-derived, was chosen such that it corresponds to the saddle point of the histogram. (F-G), Violin plots showing the correlation between expression levels of WPRE and tdTomato in P6 (C) and P56 (D) samples. (H), Piecharts showing the percentages of tdTomato positive cells in each of the 8 clusters in P6. For cells in the C6, C7 and C8, these will correspond to being HC-derived. (I), Heatmap showing the top 10 signature genes for each of the four osteogenic sub-populations identified in the P6 and P56 data combined (refer to Figure 1H). (J), Volcano plot showing the DEGs between HC-derived and non-HC-derived Osteoblasts in the integrated data of P6 and P56. preHC: pre-hypertrophic chondrocytes; HC: hypertrophic chondrocytes; imOB: immature osteoblasts; mOB: mature osteoblasts.