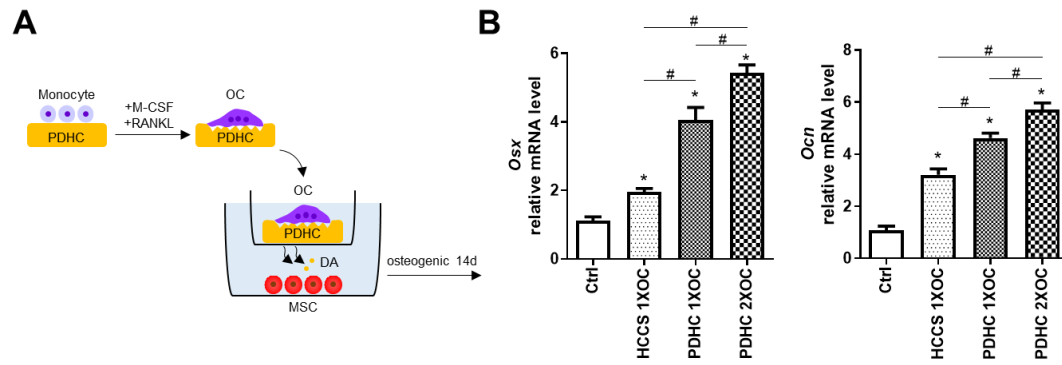


**Supplementary Fig. S1. (A)** FTIR spectrum of PDHC material. It contains the chemical bonding characteristic peaks indicating hydroxyapatite-gel, enTMOS, calcium silicate, polydopamine, etc. **(B)** XRD measurement of PDHC material. The peaks represent different phases of hydroxyapatite (HAp),  $\text{Ca(OH)}_2$  and calcium silicate (CS).



**Supplementary Fig. S2.** Use bone marrow-derived monocytes instead of RAW cells as OC precursor for validation. **(A)** Schematic diagram of the study. **(B)** After 14d osteogenic induction under transwell co-culture condition, MSC's osteogenic genes *Osx* and *Ocn* expression. \* $P < 0.05$  compared to the Ctrl group. # $P < 0.05$ .