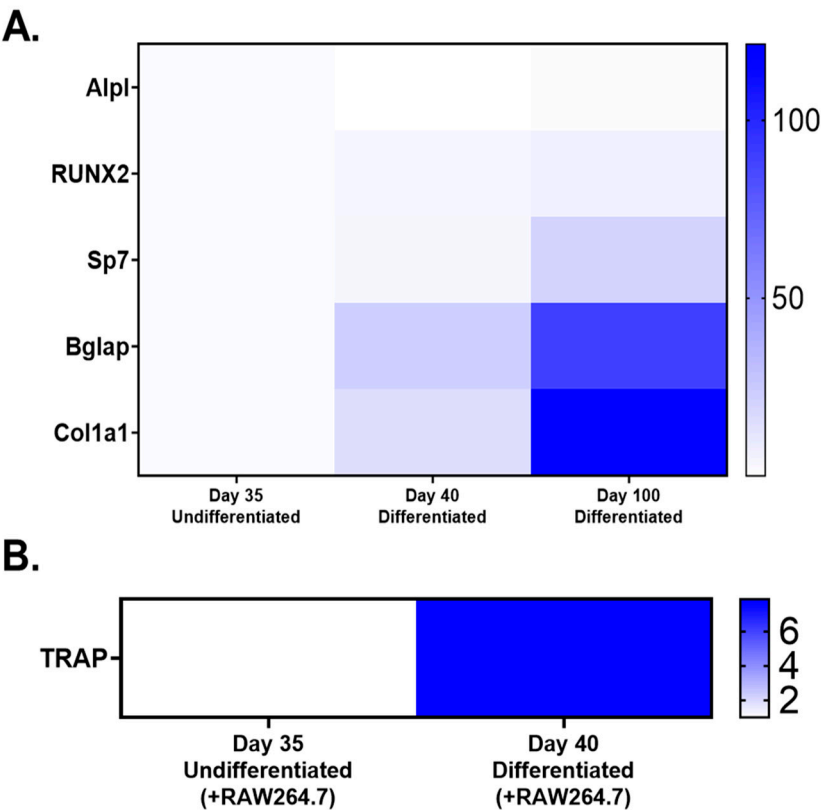
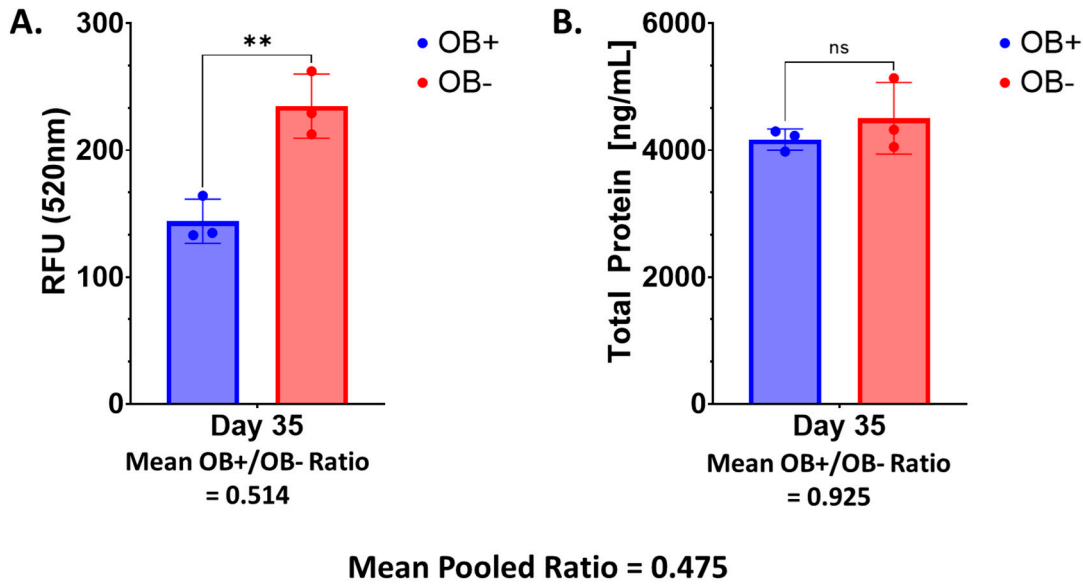


Supplementary Figure 1. Qualitative Assessment of Relative Gene Expression from 3D-mcBOM

Relative gene expression was evaluated 3D-mcBOM for relevant osteoblastogenic and osteoclastogenic genes at different times points relative to undifferentiated control from pooled cultures at Day 35.



Supplementary Figure 2: Cell Viability and Protein Content
 Cell viability (A) and total protein concentration (B) from 3D-mcBOM (OB+) or MC3T3-E1 cells in Matrigel (OB-) at Day 35. A pooled ratio of OB+/OB- conditions was calculated by multiplying the individual ratios for cell viability and protein concentration.



Supplementary Table 1: Summary of Experimental Outcomes for Major Components of 3D-mcBOM

Day	Process	Bone Composition & Structure	Osteoblast Function	Osteoclast Function
1-34	Osteoblastogenesis	Collagen Mineralization, Calcium Deposition (Fig3)	Hydroxyapatite quantification Osteocalcin quantification (Fig 5&8)	No Cathepsin K expression (Fig 3)
35-42	Osteoclastogenesis	Collagen Mineralization, Calcium Deposition (Fig 3)	Collagen Mineralization, Calcium Deposition, Collagen1a1 expression, ALPL analysis (Fig 3, 6-7, 9-11)	Cathepsin K expression, CTX-1 analysis (Fig 3, 6-7, 9-11)
42+	Bone Homeostasis	Collagen Mineralization, Calcium Deposition, FTIR analysis, FITC microstructure analysis (Fig 3 & 4)	Collagen Mineralization, Calcium Deposition, Colla1 expression, ALPL analysis (Fig 3, 6-7, 9-11)	Cathepsin K expression, CTX-1 analysis (Fig 3, 6-7, 9-11)