

Description of Additional Supplementary Files

Supplementary Data 1. BMD loci investigated in this study (DEXA and heel ultrasound); ATAC-seq ENCODE IDR conservative narrowPeaks from 9 replicates of hMSC-derived osteoblasts; open proxies of the BMD GWAS sentinel SNPs at $r^2 \geq 0.8$ and $r^2 \geq 0.4$.

Supplementary Data 2. Summary statistics from HiCUP pre-processing of Capture C data from 3 replicates of hMSC-derived osteoblasts (from 3 independent donors) and 3 replicates of HepG2 cells.

Supplementary Data 3. RNA-seq expression data of hMSC-derived osteoblasts from 3 independent donors. Fpkm and percentile of expression are reported for all genes and ATAC-seq plus Capture C implicated genes. Implicated genes with zero expression are also reported.

Supplementary Data 4. Capture C interaction data from hMSC-derived osteoblasts from 3 independent donors. Significant calls from CHiCAGO with CHiCAGO score ≥ 5 are reported for the BMD GWAS loci investigated (DEXA and heel ultrasound), using open proxies with $r^2 \geq 0.8$ and $r^2 \geq 0.4$.

Supplementary Data 5. Capture C interaction data from 3 replicates of HepG2 cells. Significant calls from CHiCAGO with CHiCAGO score ≥ 5 are reported for the 273 BMD GWAS loci investigated (DEXA and heel ultrasound), using open proxies with $r^2 \geq 0.8$.

Supplementary Data 6. Capture C interaction data from hMSC-derived adipocytes from 3 independent donors. Significant calls from CHiCAGO with CHiCAGO score ≥ 5 are reported for the 3 BMD loci investigated more in depth in this study (*CPED1*, *STARD3NL* and *SMAD3*).

SOURCE DATA

Source data for Figures 2 and 3 and Supplementary Figures 6 and 7.

Figure 2: quantitative gene expression of key osteogenesis markers plus Alk Phos and Alizarin Red staining in hMSC-derived osteoblasts transfected with ING3, CPED1, WNT16, EPDR1 and SFRP4 siRNA.

Figure 3: quantification of Oil Red O -stained lipid droplets and quantitative gene expression for C/EBP alpha and PPAR gamma in hMSC-derived adipocytes transfected with ING3 and EPDR1 siRNA.

Supplementary Figure 6: quantitative gene expression for ING3, CPED1, WNT16 and SP7 in hMSC-derived osteoblasts transfected with ING3, CPED1, WNT16, EPDR1 and SFRP4 siRNA. Quantitative gene expression for ING3 and EPDR1 in hMSC-derived adipocytes transfected with ING3 and EPDR1 siRNA.

Supplementary Figure 7: quantification of ING3, EPDR1 and p-SMAD/SMAD protein levels from Western blots from hMSC-derived osteoblasts transfected with ING3 and EPDR1 siRNA.