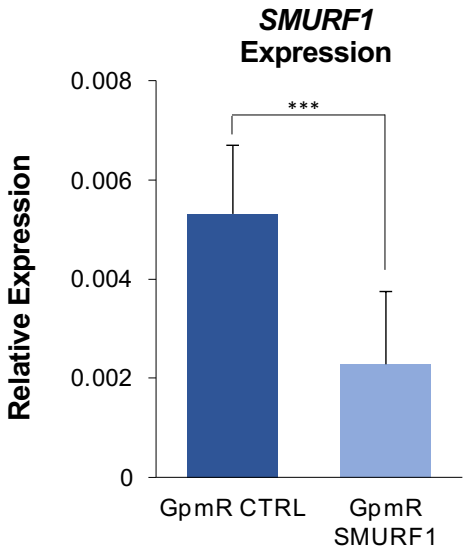
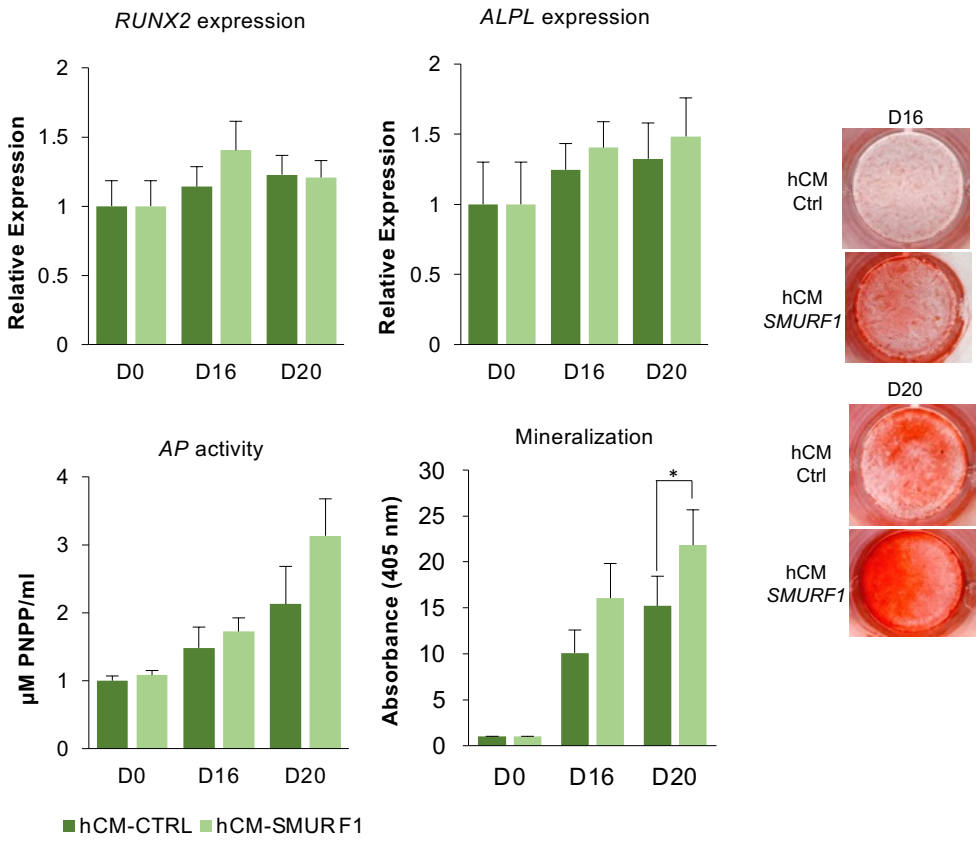


Supplementary Figure 1. *SMURF1* silencing in ASC52telo human MSC cell line. Graph shows SMURF1 expression as seen by qPCR in cells tranfected with 20nM of a control unspecific GapmeR or a GapmeR specifically designed for the silencing of *SMURF1* in human cells. Graph shows average results from three independent experiments. Error bars show Standard Error of the mean value. *** p-value <0.001. n=6.



Supplementary Figure 2. ASC52telo osteogenic differentiation of 20 days following 48h-human Conditioned Media (hCM) preconditioning. No changes were observed in *RUNX2. ALPL* expresión and enzimatic activity show a non-significant increase in hCM-*SMURF1.* Statistically significant enhancemen in mineralization confirms osteogenic impact of hCM-*SMURF1*. Graph shows average results from four independent experiments . Error bars show Standard Error of the mean value. * is p-value <0.05.


row min
Heat Map Soluble Fractions (SF)
row max
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SF_SMURF_03
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BASP1
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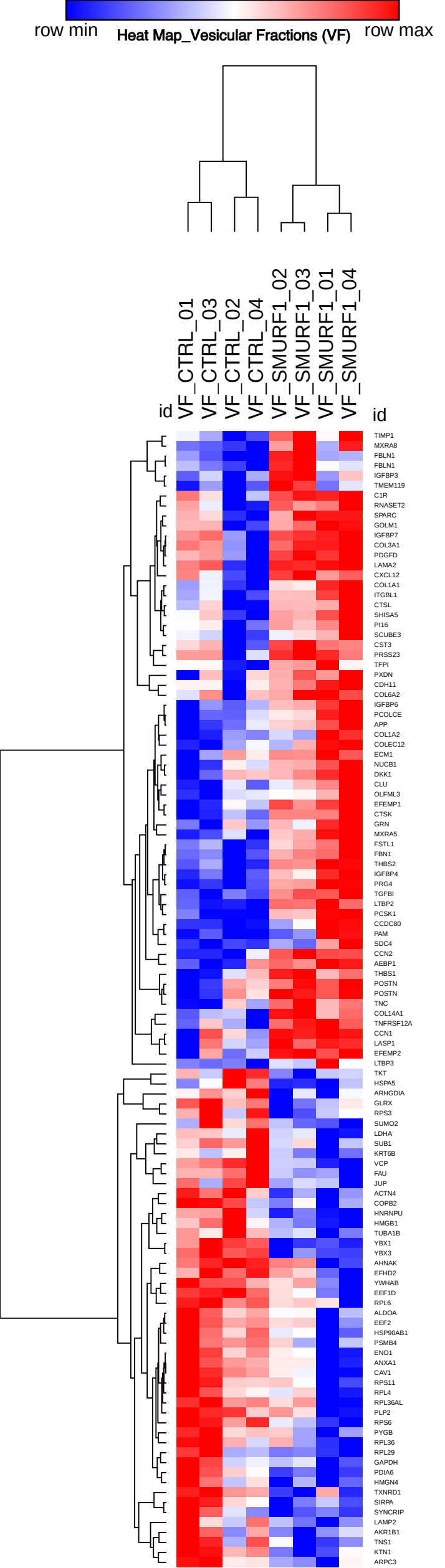
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RPS3
SUMO2
LDHA
SUB1
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ACTN4
COPB2
HNRNPU
HMGB1
TUBA1B
YBX1
YBX3
AHNAK
EFHD2
YWHAB
EEF1D
RPL6
ALDOA
EEF2
HSP90AB1
PSMB4
ENO1
ANXA1
CAV1
RPS11
RPL4
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PLP2
RPS6
PYGB
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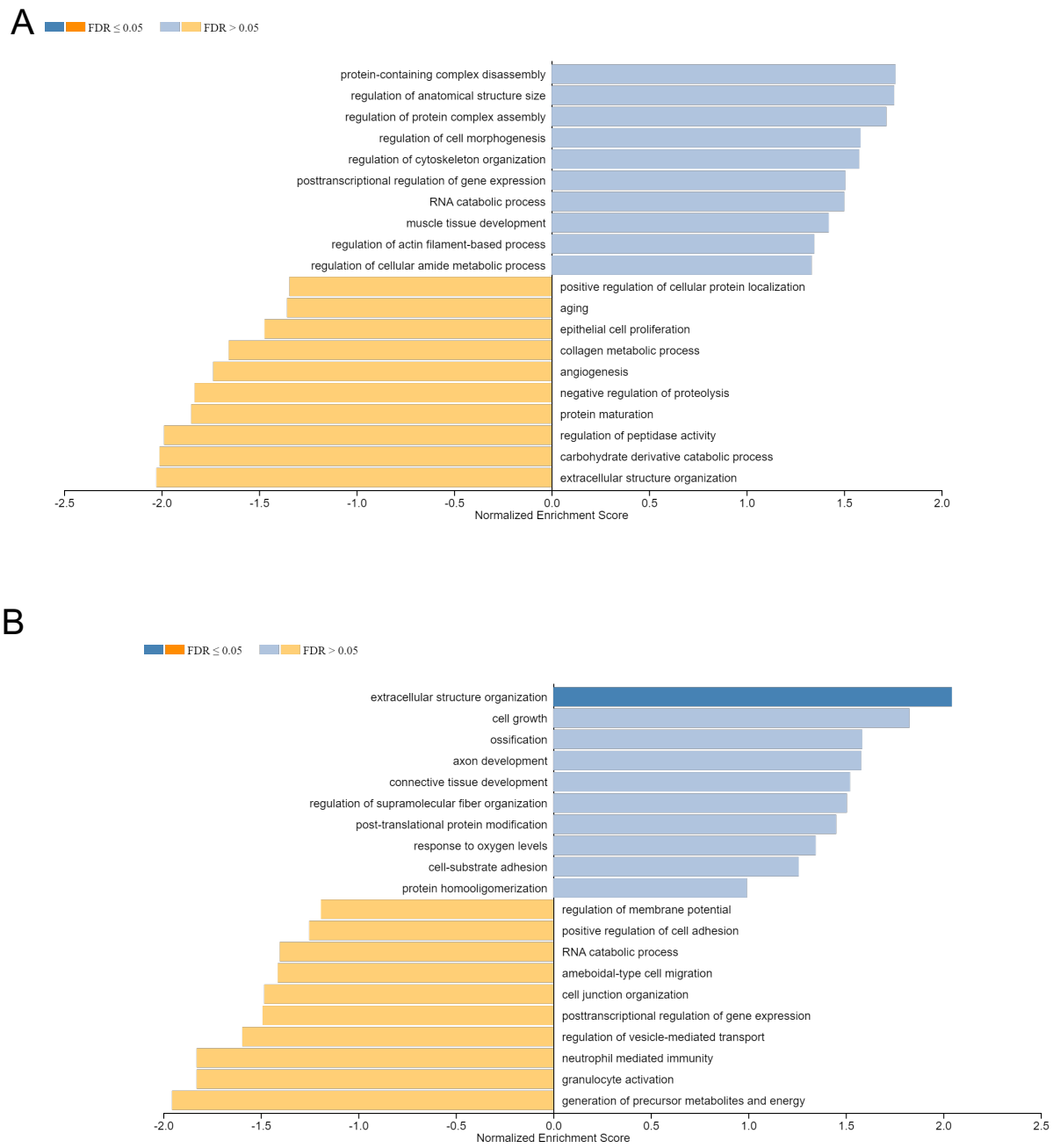
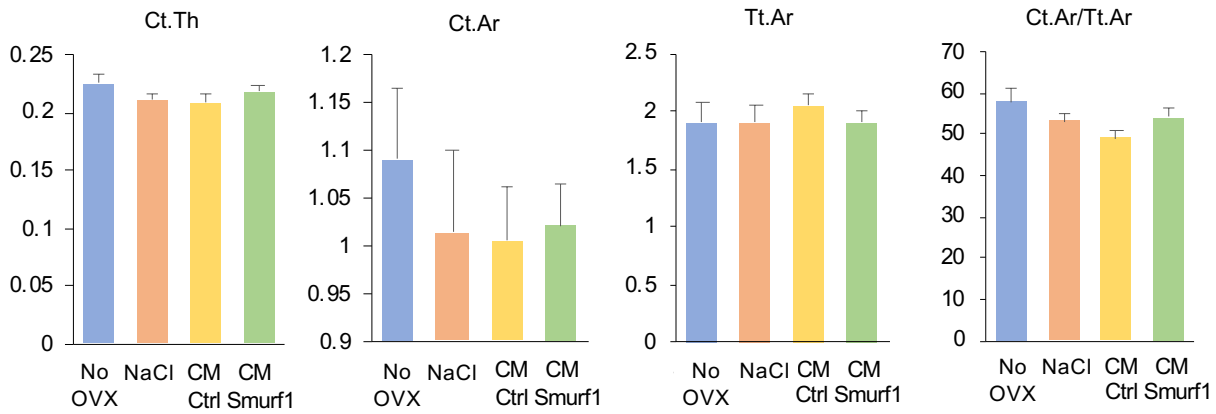


Supplementary Figure 5. Gene Ontology analysis of proteins significantly enriched in soluble and vesicular fractions of CM-*SMURF1*. A: Functions that can be associated with a regeneration processes like "regulation of cell morphogenesis" or "post-transcriptional regulation of gene expression" are identifiied in soluble fraction of CM-*SMURF1* (blue bars). B: Functions suggesting a positive switch towards pro-osteogenic functions such as "extracellular matrix organization" or "ossification" are enriched in vesicular fraction of CM-*SMURF1* (blue bars). Yellow bars highlights functions boosted in CM-Ctrl.



Supplementary Figure 6. Micro-CT cortical analysis reports no changes in any of the conditions under study. Cortical thickness (Ct.Th), Cortical Area (Ct.Ar), Total Area (Tt.Ar) and Cortical Area/Total Area (Ct.Ar/Tt.Ar). (n=5). Error bars show Standard Error of the mean value.