Supplementary Information (SI) for Journal of Materials Chemistry B.

Bioinspired Osteoblast-imprinted Piezoelectric PDMS/$BaTiO_3$ Nanocomposites Accelerate the Osteogenic Differentiation of Adipose-derived Stem Cells under Mechanical Stimulation

F. Pouladzadeh [a], Sh. Bonakdar [b*], N. Haghighipour [b], A.A. Katbab [a†], S. Bagheri-Khoulenjani [a*]

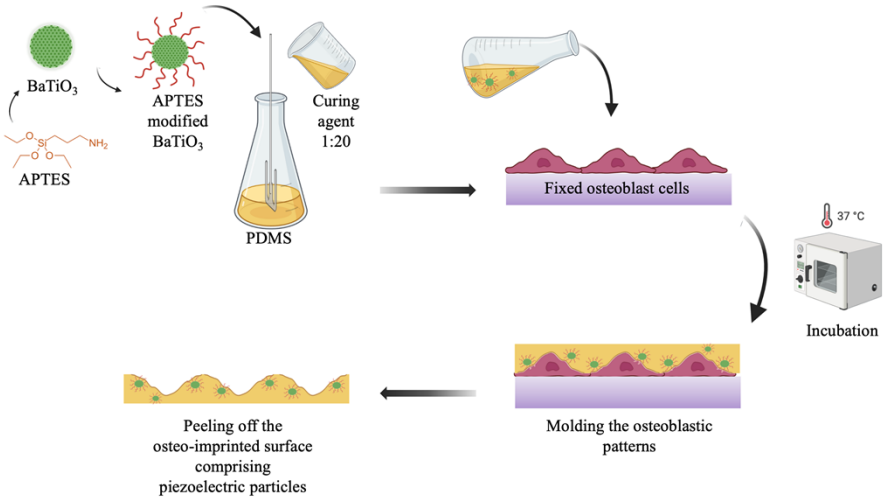

Figure S1 Schematic of the osteoblast-imprinted PDMS/20$BaTiO_3$ substrate fabrication process.

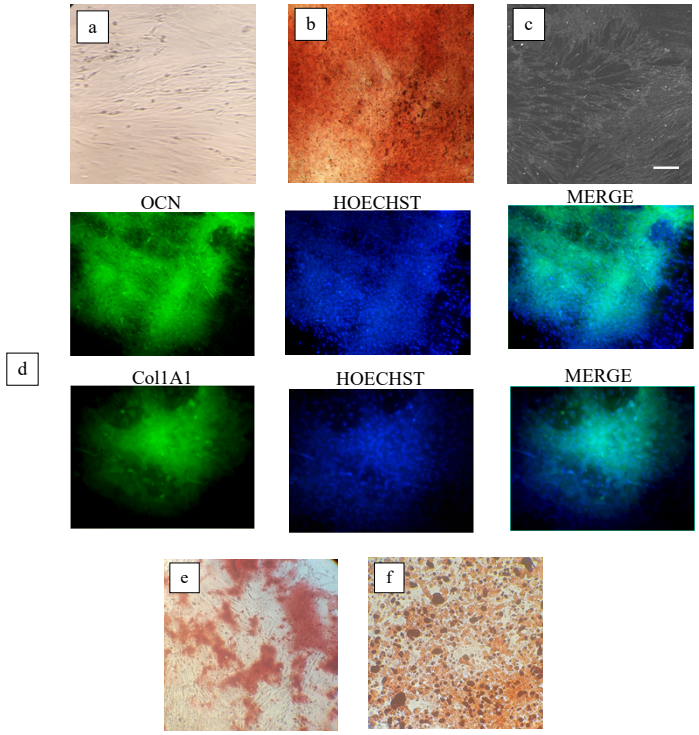

Figure S2 Characterization of isolated human osteoblasts used for the preparation of templates for cellular imprinting. The osteoblastic nature of the cells is confirmed by the results of optical microscopy (a), alizarin red staining (b), SEM (c), and immunostaining (d). The scale bar represents 200 μm.
Alizarin red (e) and Oil red (f) staining results confirmed the differentiation potential of ADSCs towards osteogenic and adipogenic lineages.

Table S1 Sequences of primers used in Real-Time PCR

primer	sequence	
RUNX2	Forward TCCAGACCAGCAGCACTCC	Reverse CCATCAGCGTCAACACCATC
ALP	Forward GCCTTGCTCACTCACTCACT	Reverse ACAGGAGAGTCGCTTCAGAGA
Col-I	Forward CGATGGCTGCACGAGTCA	Reverse GGTTCAGTTTGGGTTGCTTGTC
OCN	Forward CAGGAGGGCAGCGAGGTAG	Reverse CCGATGTGGTCAGCCAACT
ON	Forward TGGCAGAGGTGACTGAGGTATC	Reverse GTCCTGGCACACGCACAT
GAPDH	Forward GAGTCCACTGGCGTCTTCA	Reverse TCTTGAGGCTGTTGTCATACTTC

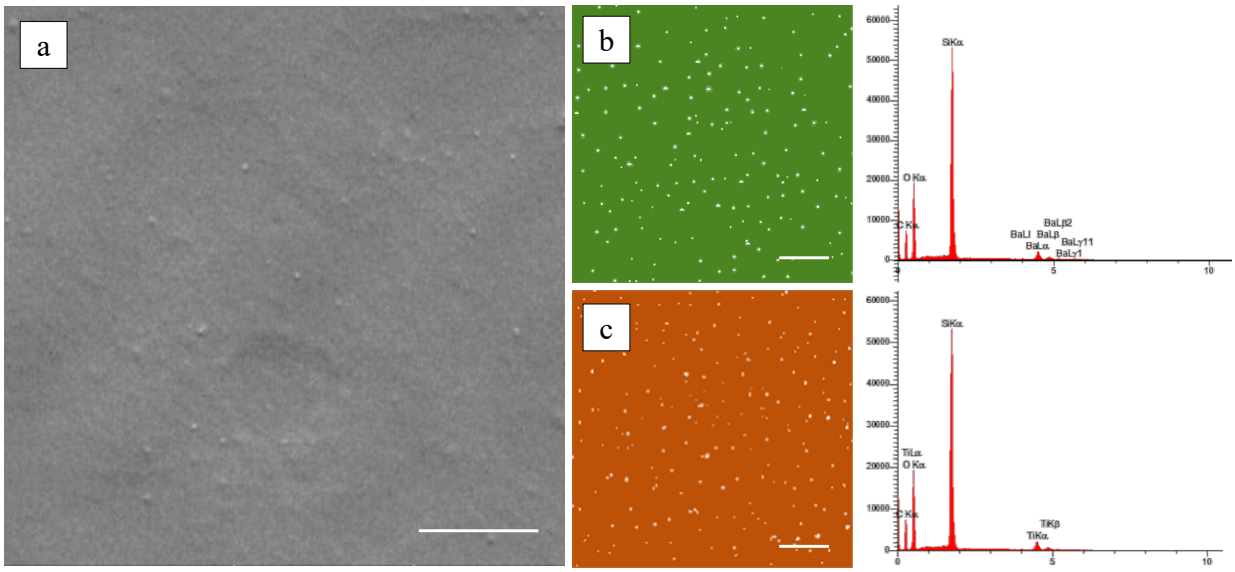

Figure S3 SEM micrograph of PDMS filled with 20 wt% APTES modified $BaTiO_3$ (a). Results of surface mapping and elemental analysis by EDS technic for Titanium (b) and Barium (c). The micrographs are acquired at the magnification of 1000x; The scale bar represents 20 μm.

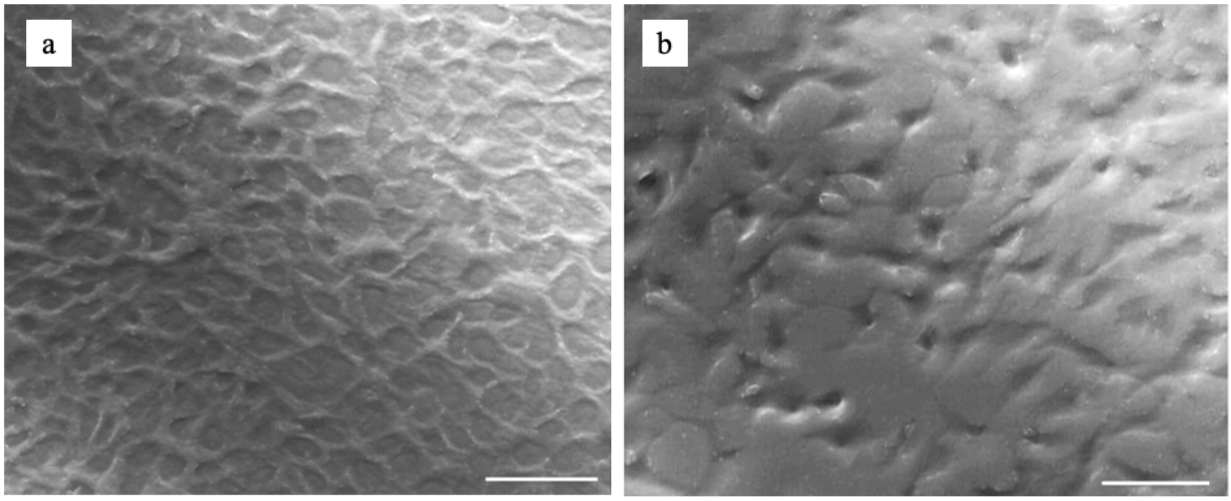

Figure S4 SEM micrographs of PDMS/20$BaTiO_3$ imprinted substrates comprising patterns of MG-63 (a) and HeLa (b) cell footprints. The micrographs are acquired at the magnification of 250x; The scale bar represents 50 μm.