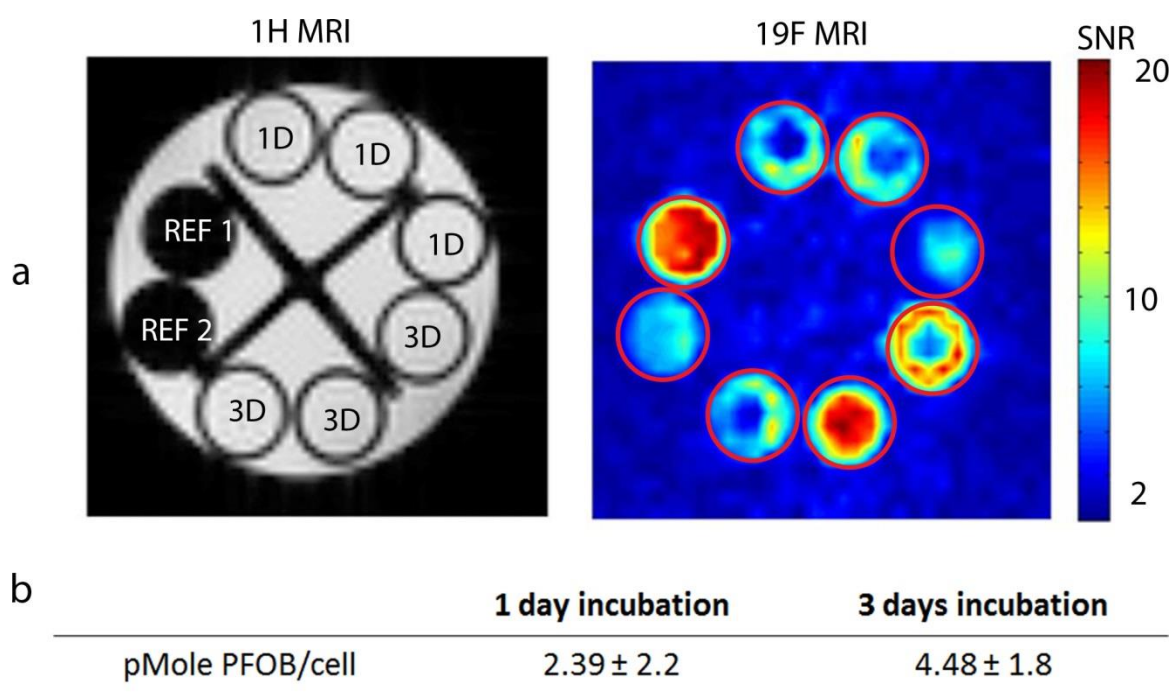


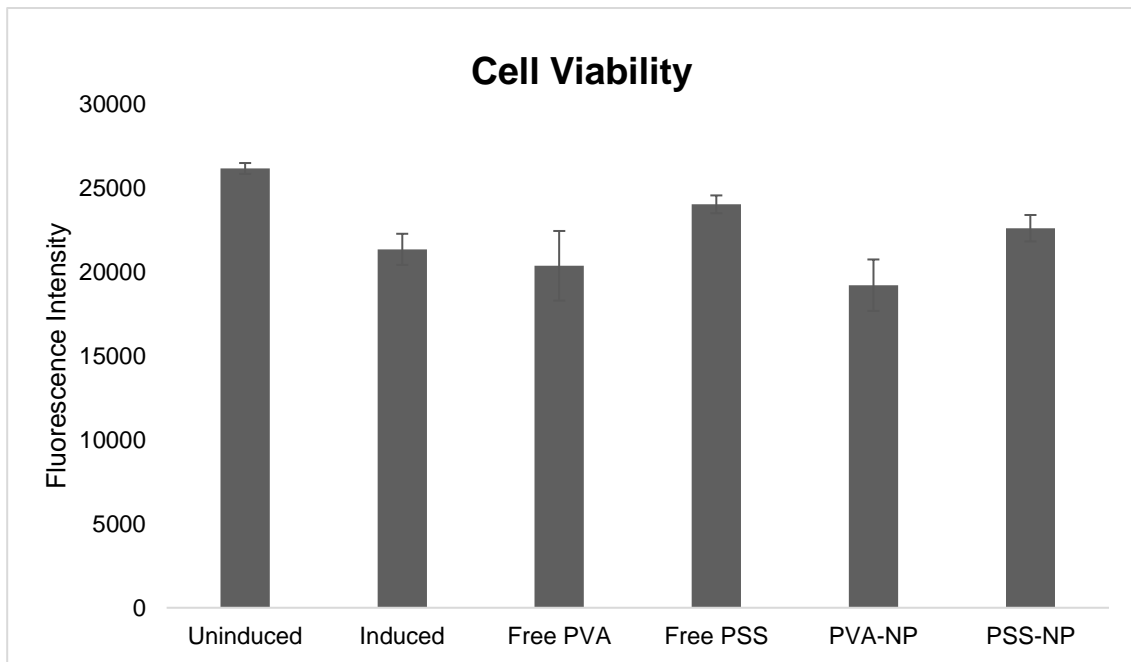
Supplementary Figures

Table S1: Hydrodynamic size and Zeta Potential of PSS-NP in Culture Media

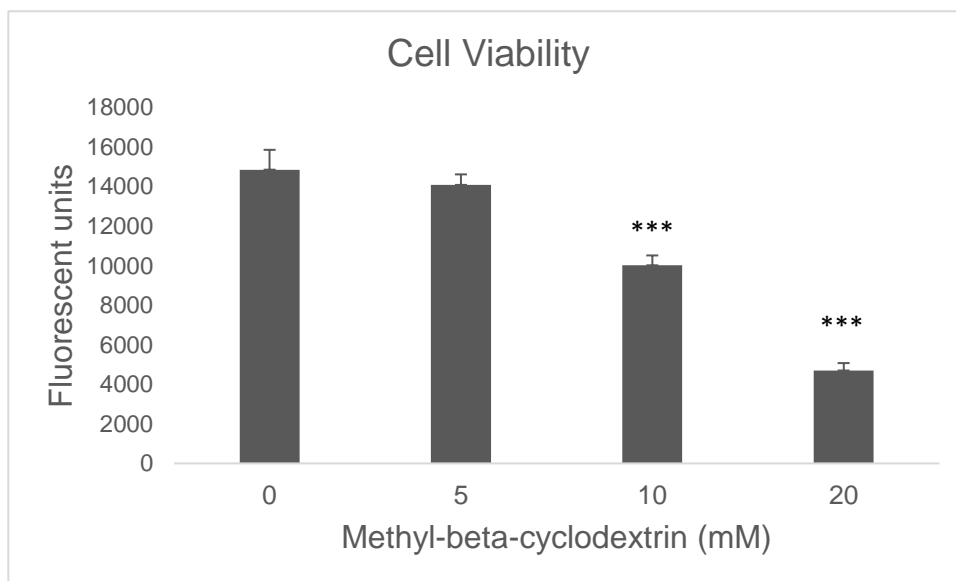
	Size (nm)	PDI	Zeta potential (mV)
PSS-NP in water	138 ± 4.5	0.159	-43.4 ± 3.43
PSS-NP in completed media	170.1 ± 4.8	0.174	
PSS-NP in completed media (4 hours)	171.2 ± 1.5	0.218	
PSS-NP in completed media (8 hours)	173.5 ± 5	0.229	



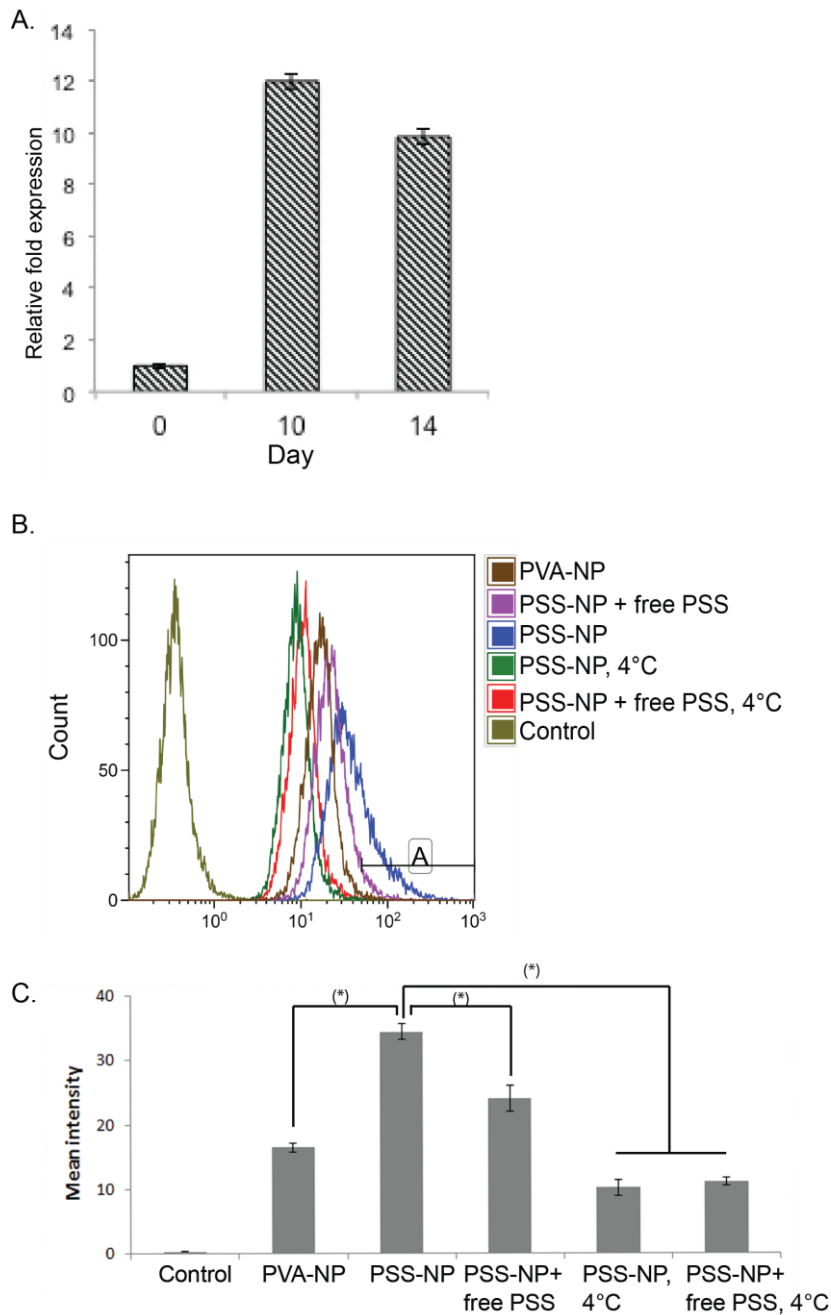
Supplementary Figure 1: *in vitro* ^{19}F MRI signal of cells. A) Cells were incubated for one day (1D) or three days (3D) with PSS-NP. B) Quantified amount of PFOB per cell from A). REF1: 3.87 nmol PFOB and REF2: 1.93 nmol PFOB in CDCl_3 .



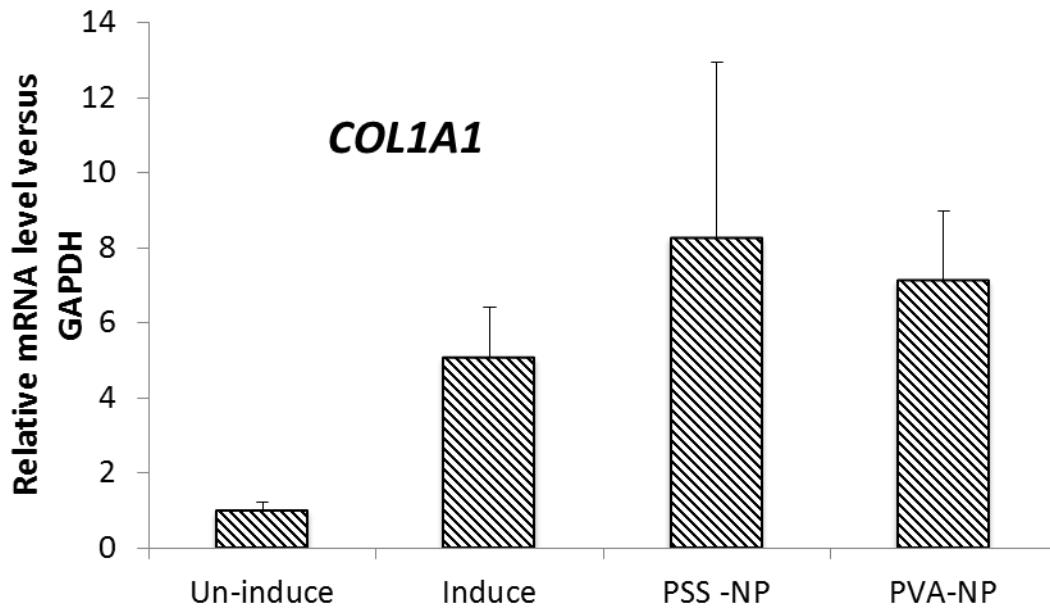
Supplementary Figure 2 Cell viability of hMSC-TERT. Cells were labelled with 1mg /ml of NPs of free polymer after 3 days of incubation and cell viability was assessed.



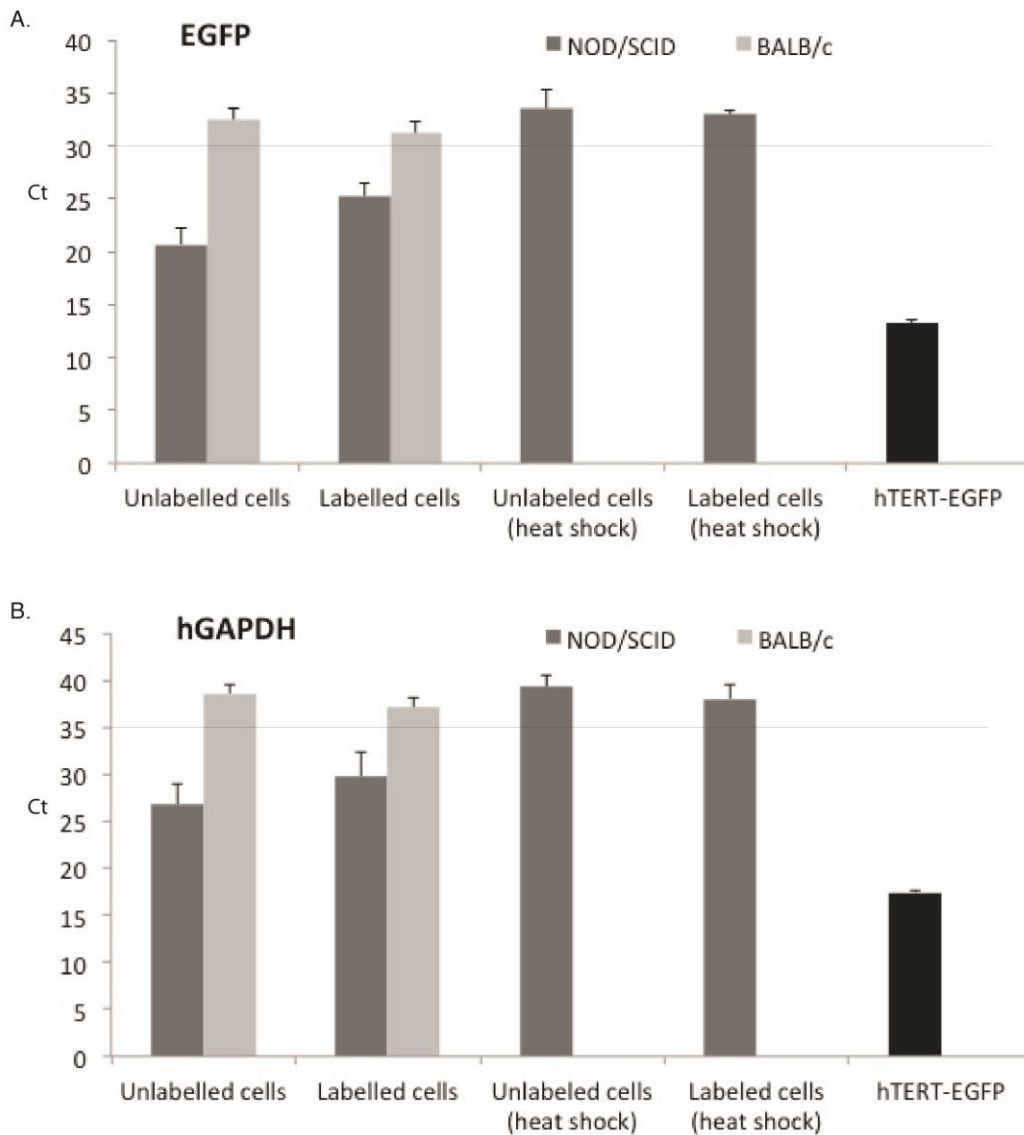
Supplementary Figure 3 Cell viability of hMSC-TERT. Cells were treated with methyl-beta-cyclodextrin at different concentrations for 4 hours and cell viability was assessed.



Supplementary Figure 4 CAV-1 is expressed upon osteoinduction and PSS-NPs enter hMSC-TERT cells via an energy-dependent pathway. A) hMSC-TERT was induced and RNA was collected for RT-QPCR. Results are from three independent experiments. Normalized expression is compared to day 0. The y-axis is indicative of RNA expression and the x-axis is number of days of induction. B) The uptake of PSS-NP, PSS-NP with free PSS as competitor, and PVA-NP at 37°C and 4°C were assessed by flow cytometry. Graph (C) presents the mean signal intensity from the cells. Total cell count: 10000, mean SD±3.



Supplementary Figure 5 hMSC-TERT labelled with NPs express COL1A1 upon osteoinduction. Cells were treated with the indicated NPs for 24 hours and then induced with osteogenic media for 7 days, following which QPCR was performed. The expression of COL1A1 was normalized to GAPDH.



Supplementary Figure 6: Human GAPDH and EGFP expression from hMSC-TERT-GFP labelled with PSS-NP on HA/TCP. Scaffolds containing cells were collected at day 24 after immunorejection studies *in vivo*, the RNA was extracted and RT-QPCR was performed to obtain the Ct values.