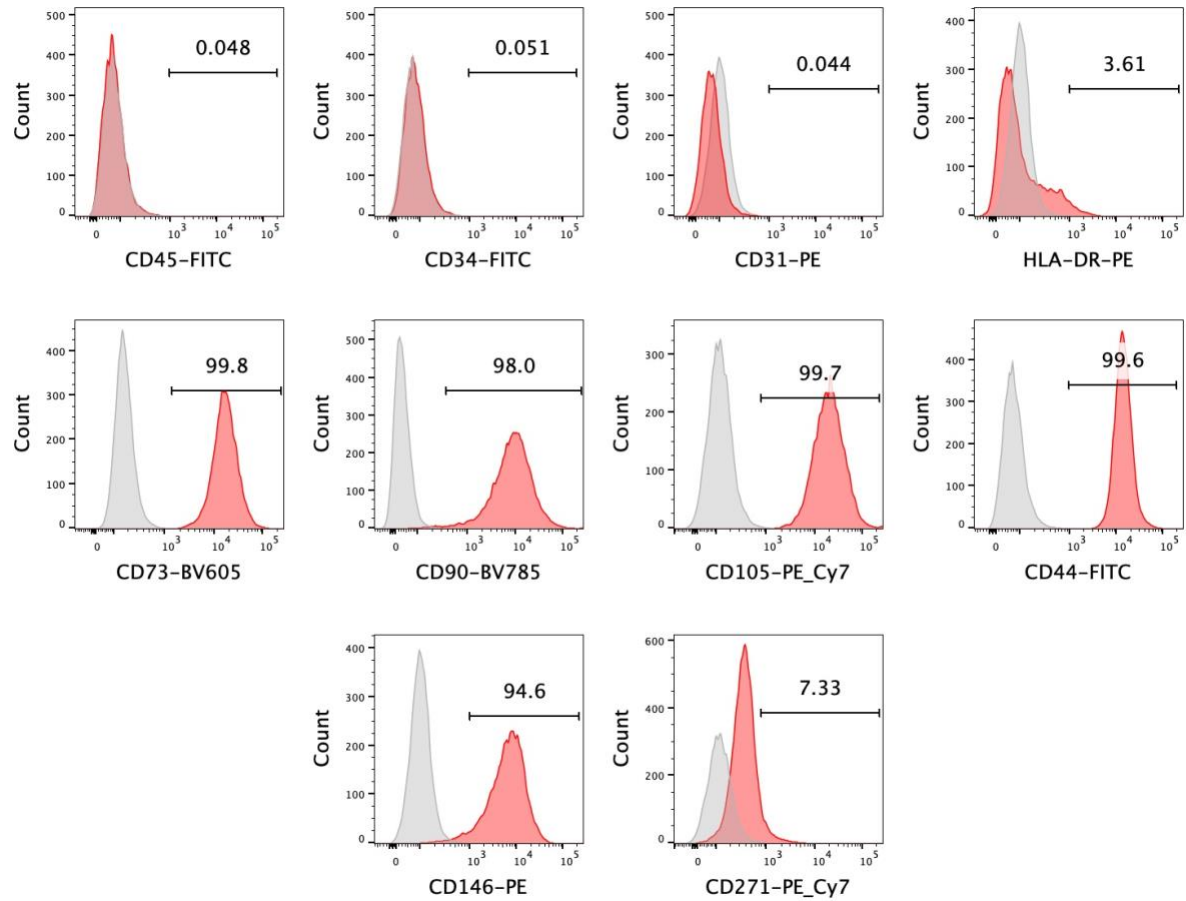
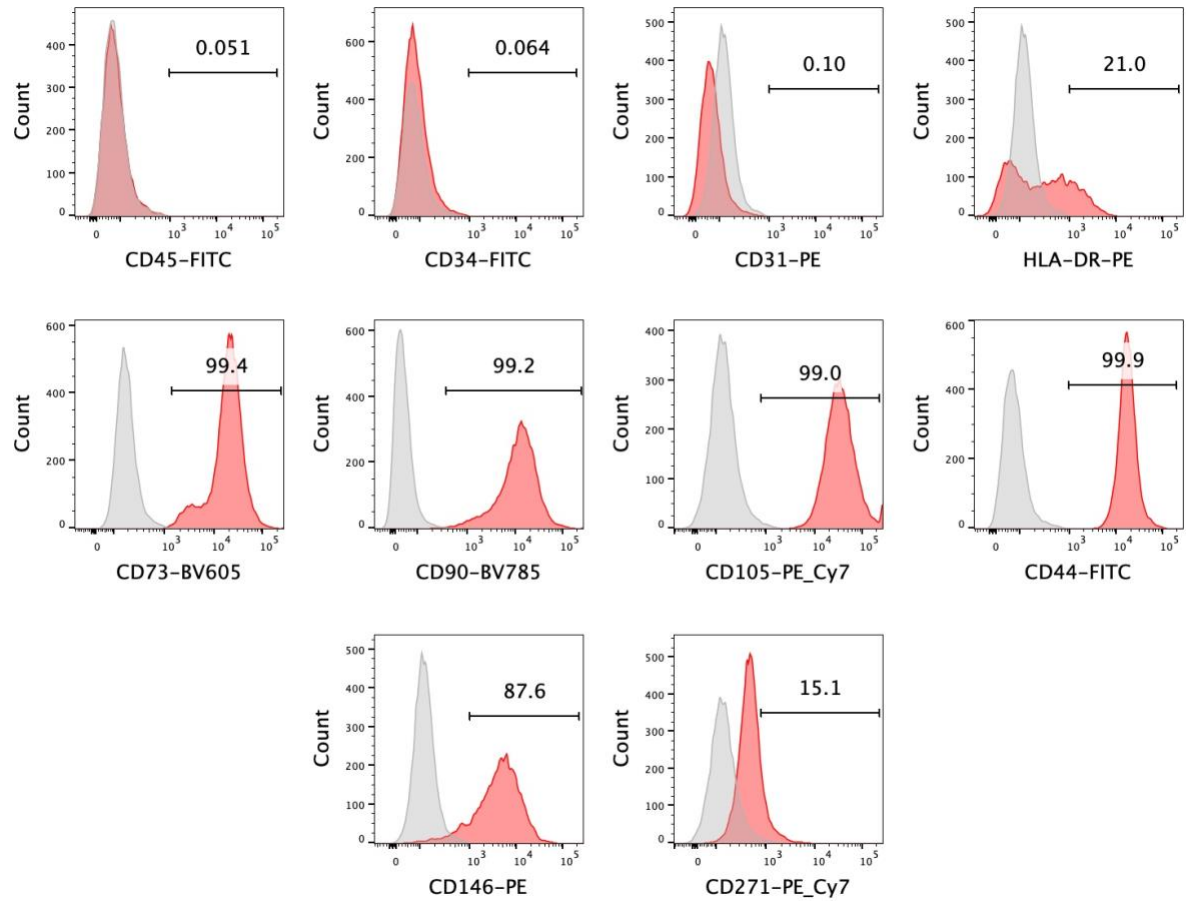


Gene		Sequence (5' - 3')
<b>Housekeeping gene</b>		
<i>GAPDH</i>	F	ATGGGGAAGGTGAAGGTCG
	R	TAAAAGCAGCCCTGGTGACC
<b>Chondrogenic genes</b>		
<i>COL2A1</i>	F	GGCAATAGCAGGTTACGTACA
	R	CGATAACAGTCTTGCCCCACTT
<i>ACAN</i>	F	TCGAGGACAGCGAGGCC
	R	TCGAGGGTGTAGCGTGTAGAGA
<i>SOX9</i>	F	ACTCCTCCTCCGGCATGAG
	R	GCTGCACGTCGGTTTTGG
<b>Hypertrophic genes</b>		
<i>COL10A1</i>	F	ACTCCCAGCACGCAGAATCCA
	R	TGGGCCTTTTATGCCTGTGGGC
<i>SP7</i>	F	TTCTGCGGCAAGAGGTTCACTC
	R	GTGTTTGCTCAGGTGGTCGCTT
<i>ALPL</i>	F	CGTGGCTAAGAATGTCATCATGTT
	R	TGGTGGAGCTGACCCTTGA
<i>IHH</i>	F	ATGAAGGCAAGATCGCTCG
	R	GATAGCCAGCGAGTTCAGG

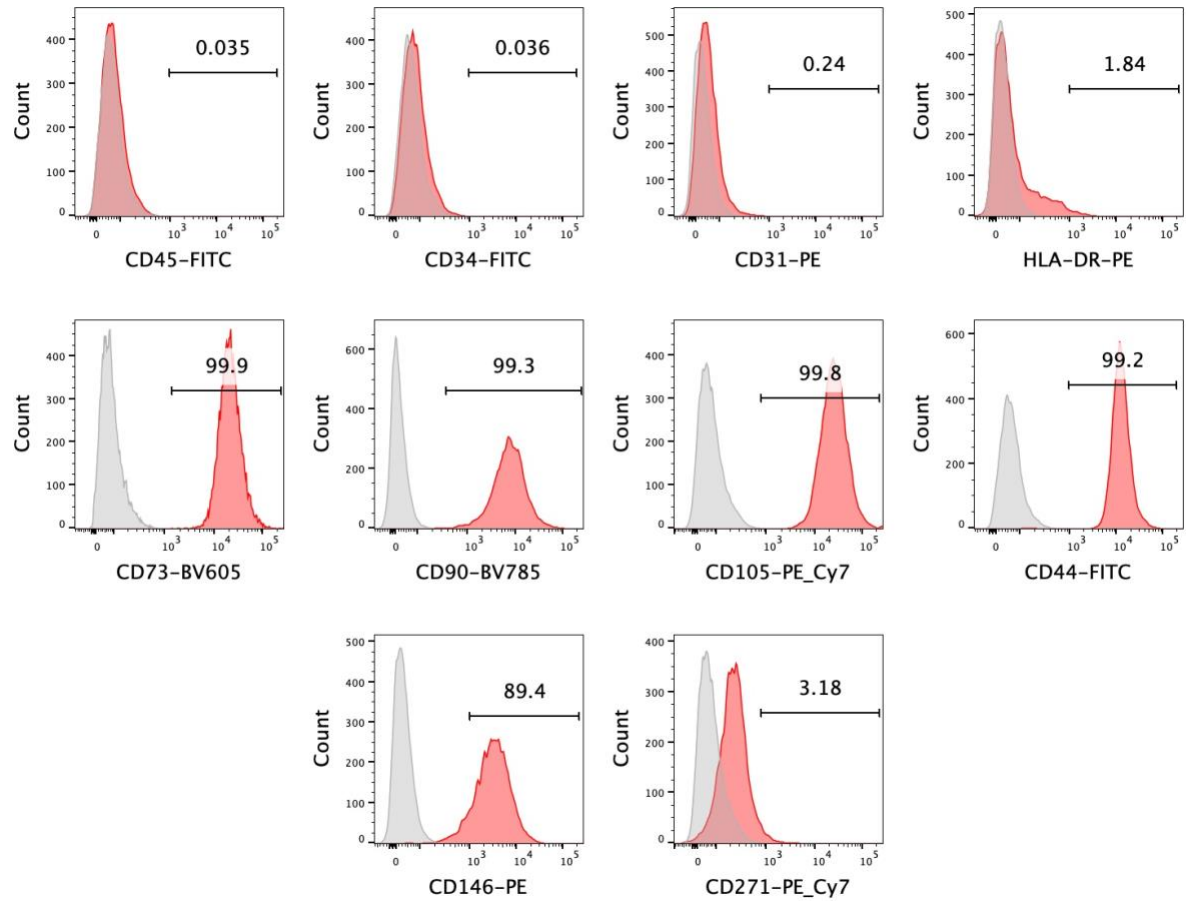
**Table S1.** Table S1 includes information related to the primer sequences described in the methods for qRT-PCR reactions.



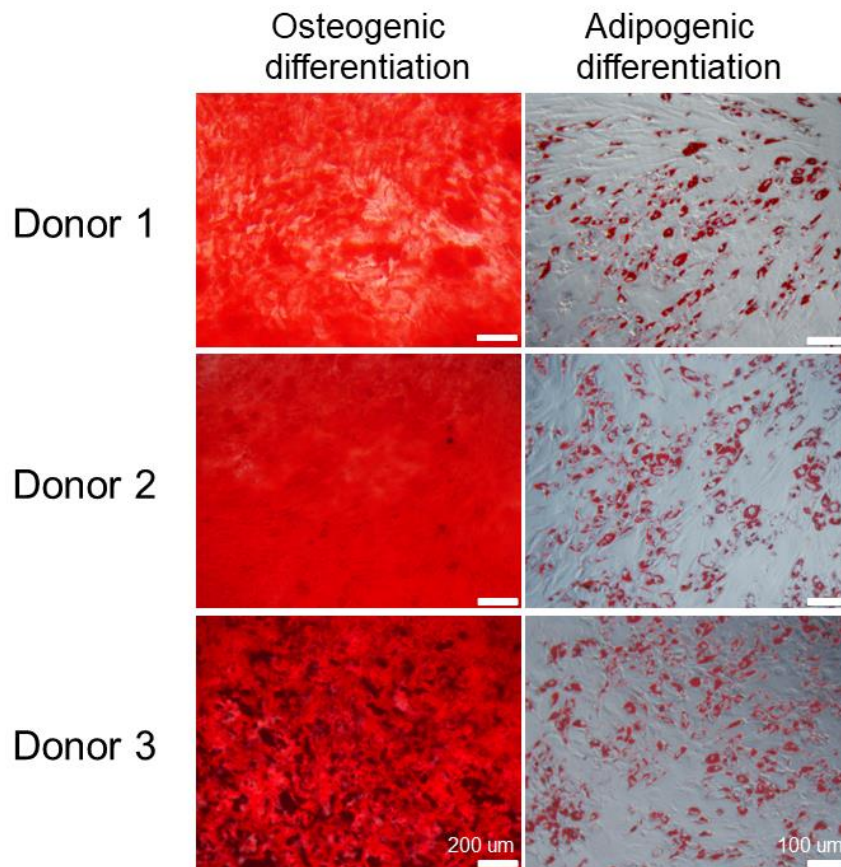
**Figure S1.** BMSC donor 1 flow cytometry characterisation. Cells were negative for haematopoietic cells surface markers, CD45, CD34 and HLA-DR (<5 %) and positive for BMSC-associated surface markers, CD73, CD90, CD105, CD44, and CD146; cells were dim for CD271. Antibody-stained cells are represented by red histograms and isotype controls are grey.



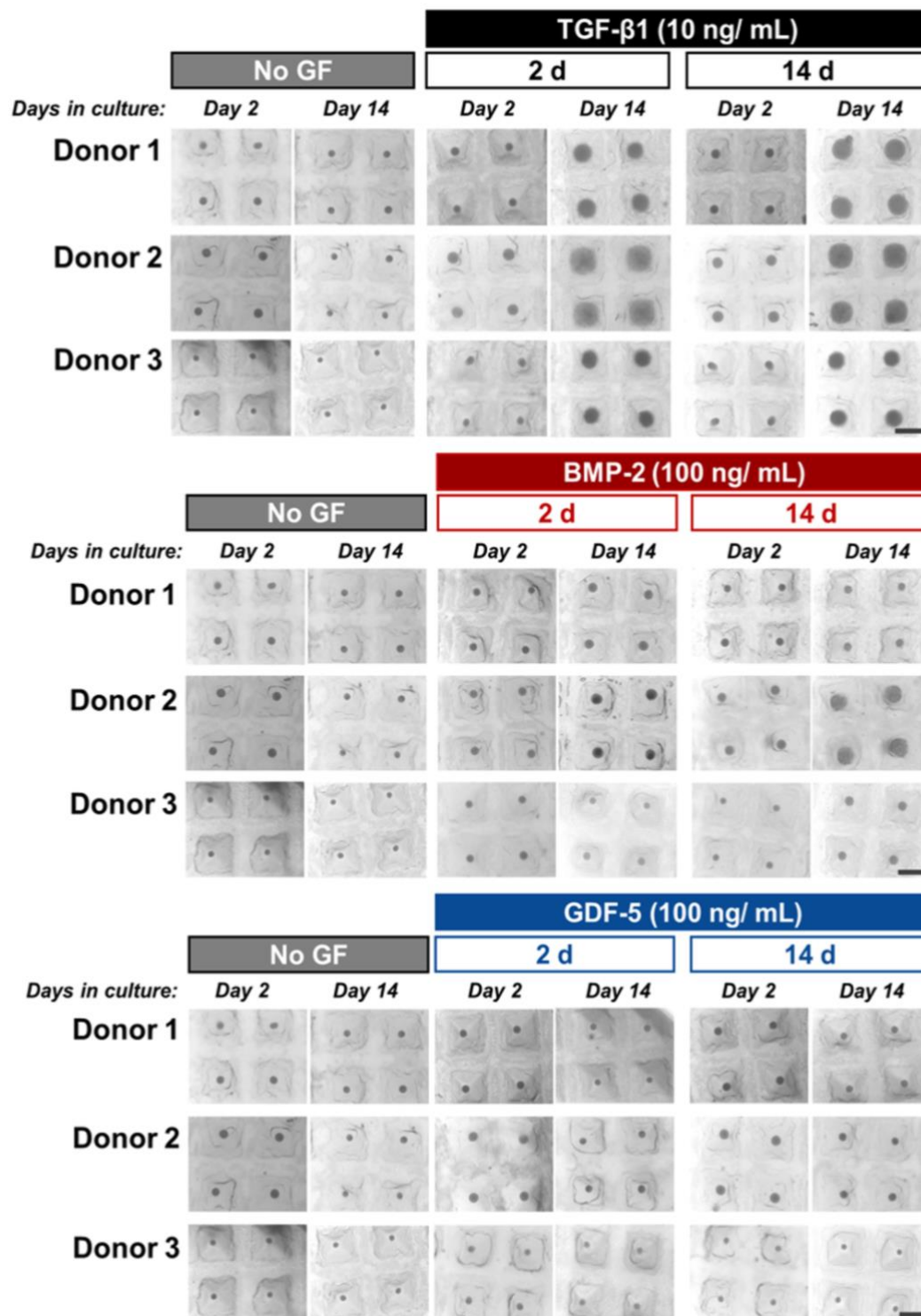
**Figure S2.** BMSC donor 2 flow cytometry characterisation. Cells were negative for haematopoietic cells surface markers, CD45, CD34 and HLA-DR (~21 % positive) and positive for BMSC-associated surface markers, CD73, CD90, CD105, CD44, and CD146; cells were dim for CD271. Antibody-stained cells are represented by red histograms and isotype controls are grey.



**Figure S3.** BMSC donor 3 flow cytometry characterisation. Cells were negative for haematopoietic cells surface markers, CD45, CD34 and HLA-DR (<5 % positive) and positive for BMSC-associated surface markers, CD73, CD90, CD105, CD44, and CD146; cells were dim for CD271. Antibody-stained cells are represented by red histograms and isotype controls are grey.

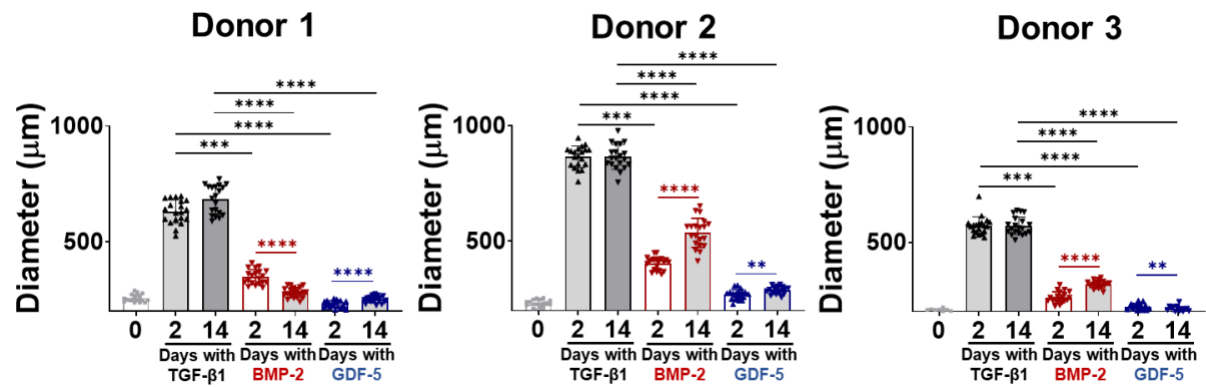


**Figure S4.** Osteogenic and Adipogenic differentiation. Left column, 21-days osteogenic induction of BMSC monolayers followed by staining with Alizarin Red S (scale bars = 200  $\mu\text{m}$ ). Right column, 21-days adipogenic induction of BMSC monolayers followed by staining with Oil Red O (scale bars = 100  $\mu\text{m}$ ).

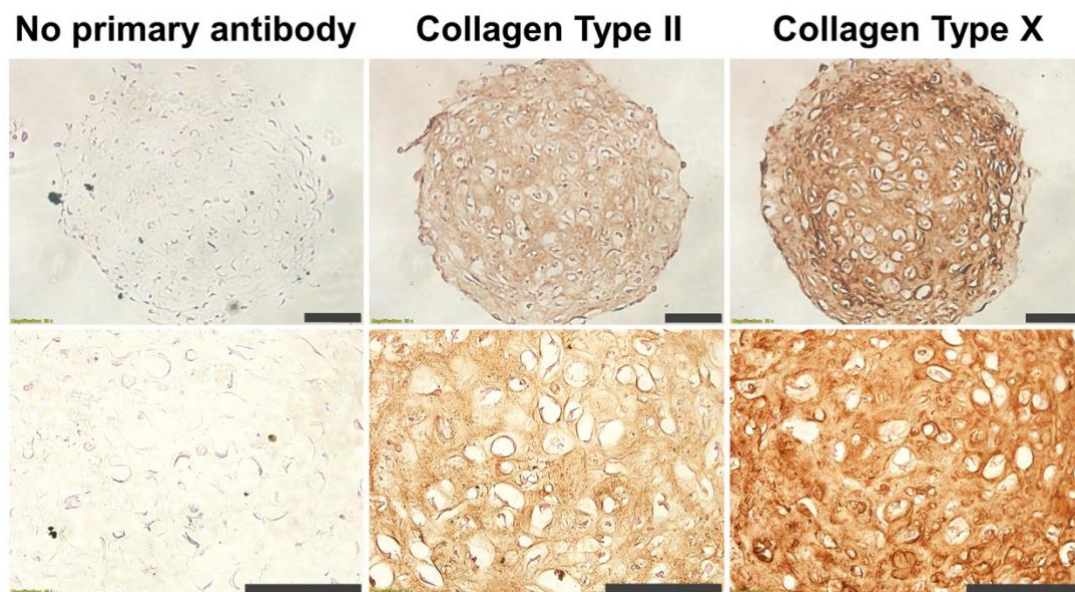


**Figure S5.** Figure S1 includes information related to Figure 1. Microscopic images of BMSC microtissues with transient (2 days) and continuous (14 days) supply of TGF- $\beta$ 1, BMP-2, and GDF-5.





**Figure S6.** Figure S2 includes information related to Figure 1A. Comparison of microtissue diameters after 2-week culture.



**Figure S7.** Figure S3 includes information related to Figure 3-4. Microscopic images of sample BMSC microtissue sections stained with DAB method treated with collagen type II and collagen type X primary antibodies compared to sections without primary antibody treatment. Scale bar = 100 μm