Supplementary section S1

The forward and reverse primers for the genes used in RT-PCR are given below:-

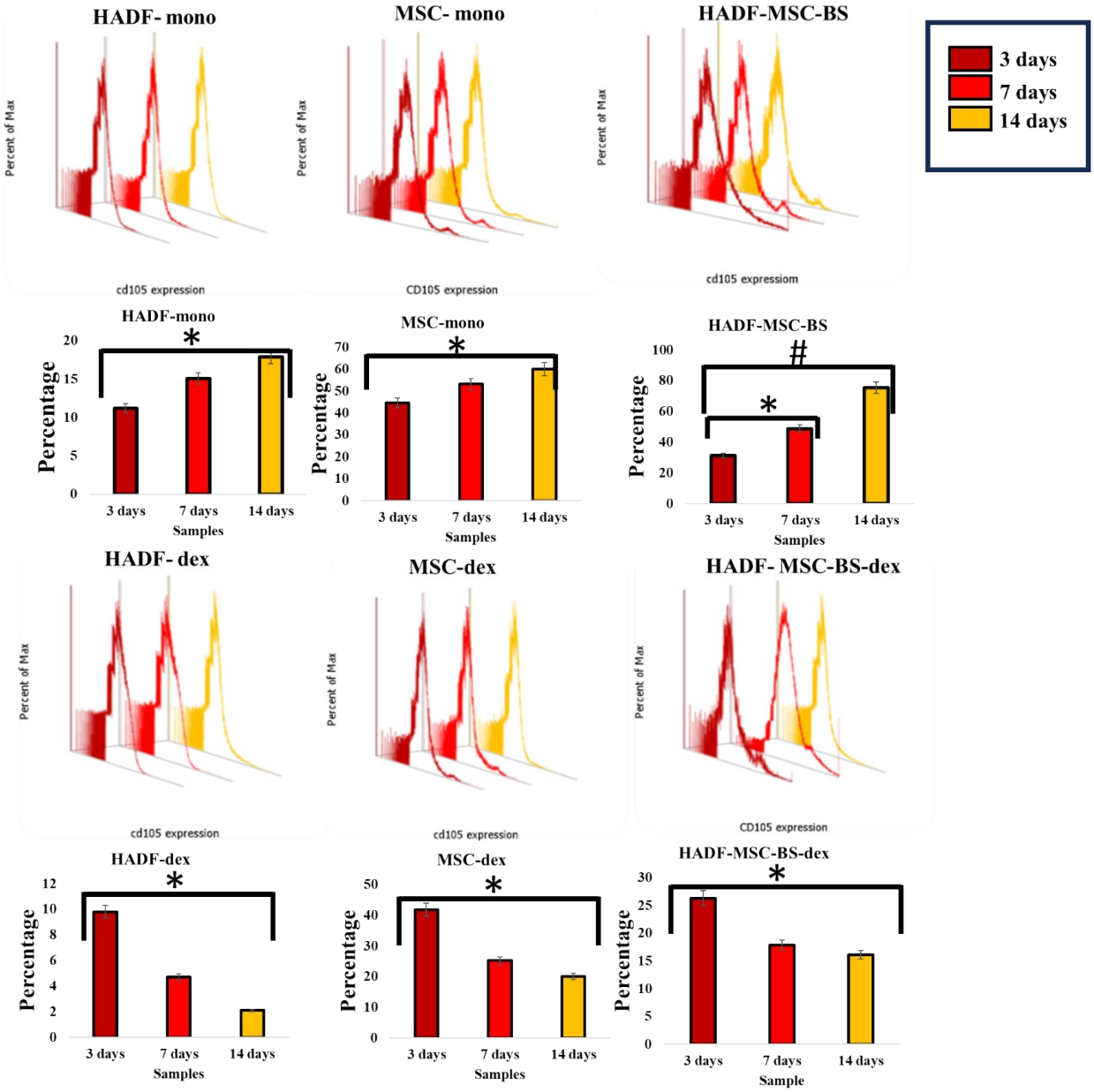
Target Gene	Primer sequence
VEGF-A-FORWARD	TCTACCTCCACCATGCCAA
VEGF-A-REVERSE	GTCCCCTTTCCTCCTTGG
VEGF-R2-FORWARD	GAACACACTTGCACACCACTG
VEGF-R2-REVERSE	GAGCCTGCCCAACATCAATTA
GAPDH FORWARD	GTCTCCTCTGACTTCAACAGCG
GAPDH REVERSE	ACCACCCTGTTGCTGTAGCCAA
eNOS-FORWARD	ATCCCATCCCCTGCCTCA
eNOS-REVERSE	GAAGATCTCCGCCTCGCTCAT
CD31-FORWARD	GTCTGATGTTTCCACTGTAACA
CD31-REVERSE	CAGGCACTTAGGCTGAGAC
CD34-FORWARD	GGACTGAGATAAAGCGCTTTGG
CD34-REVERSE	AATTCTCACAGTCGCCAGGGCT
FGF-2-FORWARD	TACTGCAAAAACGGGGGC
FGF-2-REVERSE	CCAAGTCCCCAAAGAGAC
PLC-GAMMA-FORWARD	TTCGTCTCGGGTGGTCACT
PLC-GAMMA-REVERSE	TGCTGACCCTACCAGGGTAC
ERK1-FORWARD	CAGGAGACTCGGGATGATC
ERK-1-REVERSE	CACCACGCCCGGCTAATTT

Supplementary Section S2: CD105 expression for different time points for HADF-mono, MSC-mono, HADF-MSC-BS, HADF-dex, MSC-dex, HADF-MSC-BS-dex.

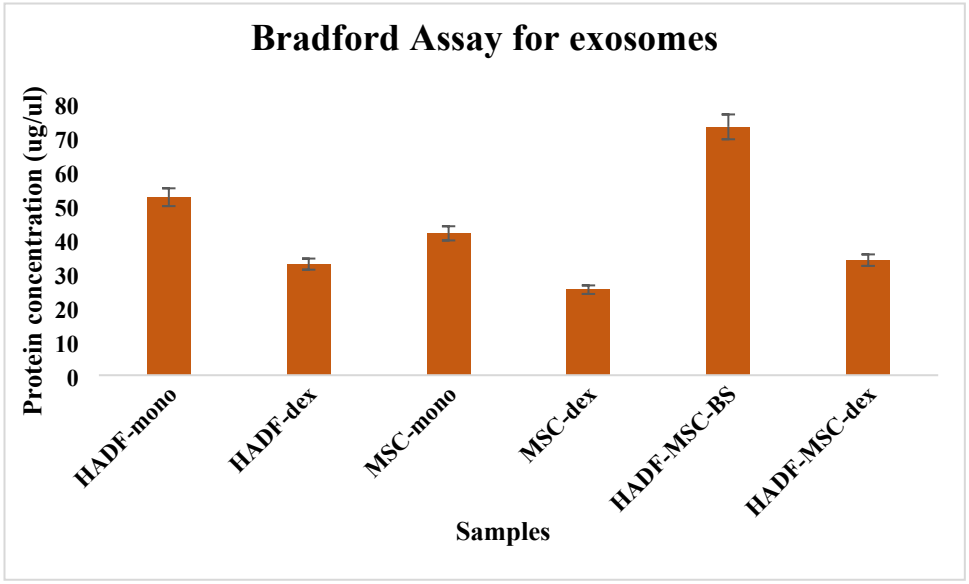
CD105+ marker, also known as endoglin, is considered as an MSC marker as well as an endothelial cell marker[48]. CD105 is also expressed on HUVEC and activated endothelial progenitor cells. Stem cells expressing increased CD105+ indicate transdifferentiation towards endothelial lineage. A subpopulation of fibroblasts also express CD105+ and are known to promote vascularization. Flow cytometric analysis was conducted to observe changes in CD105+ expression for HADF-mono, MSC-mono and HADF-MSC-BS at 3,7,14 days of culture. In Figure 5, histogram plots (maximum positive intensity vs count) were taken after the cell population had been gated and compensation had been performed in the FSC-A vs SSC-A plots. SSC-A vs BL2-A plot indicated that there is no difference in sizes between HADF-mono and MSC-mono with respect to the FITC fluorophore. The Q2 quadrant representing positive expression was chosen for quantitative analysis. HADF-mono culture shows a negligible population of CD105+ positive cells at the 3 days period which increases gradually over 7 days and 14 days. Comparatively, MSC-mono has a significantly higher population of CD105+ cells over the 14 day period. This result supports our observation on MSC-mono showing high CD105+ expression transitioning towards an endothelial phenotype. In the coculture constructs, CD105+ expression is comparatively less initially due to additional presence of majorly non-expressing HADF-mono. But it increases gradually over time in 7 days and overtakes MSC-mono by 14 days. Thus, the construct indicates the potential of vascularization and subsequent conversion of non-expressing HADF and MSC coculture together towards an endothelial lineage.

However, CD105+ endothelial-like expression decreased for the HADF-dex, MSC-dex, HADF-MSC-BS. While cell growth showed increasing trend, CD105+ expression reduces, indicates cellular transition changing towards a different lineage like osteogenesis as observed by other research groups[52]. As observed, the HADF-dex and MSC-dex and HADF-MSC-BS-dex coculture exhibit significant difference with low expression of CD105+ after 3 days and gradually decrease after 7

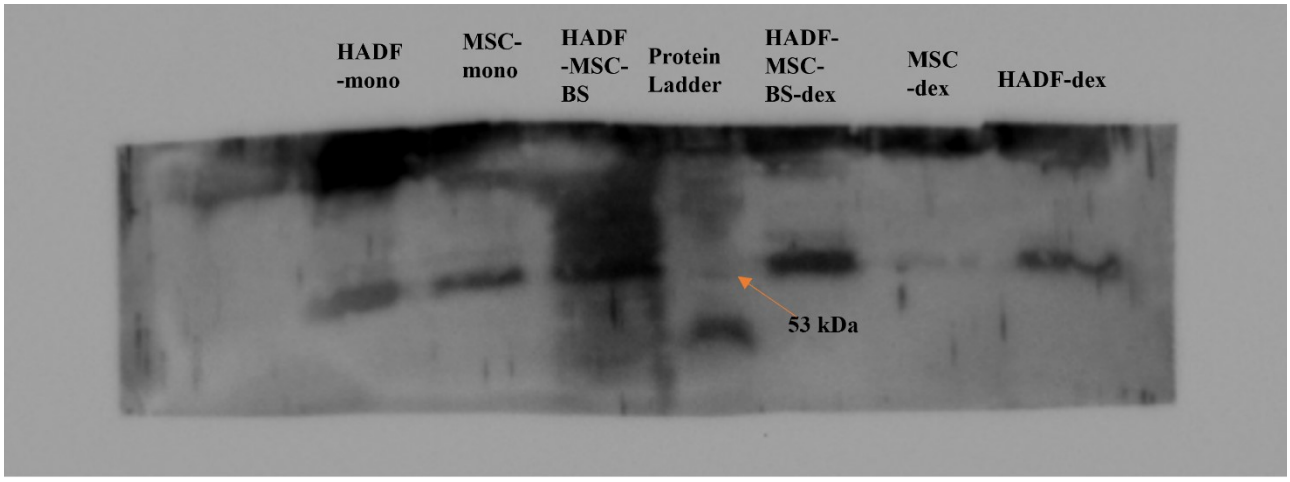
days and 14 days. There was also significant difference between HADF-dex compared to MSC-dex and HADF-MSC-BS-dex over the time period of 14 days as evident in the graphs below.



Supplementary Section S3:



Supplementary section S4



CD63 western blot raw file