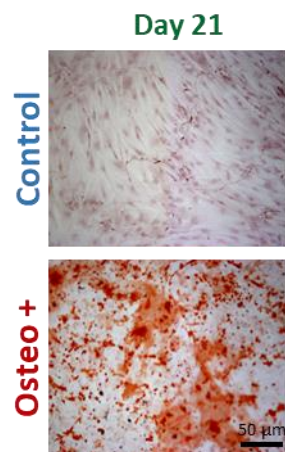


Supplemental Table 1 – Gene symbol, name, accession number, unique assay ID and amplicon length of genes used for qPCR

Gene Symbol	Gene Name	RefSeq Accession No	Unique Assay Id	Amplicon Length
ALPL	alkaline phosphatase,	NC_000001.10,NG_008940.1,NT_004610.19	qHsaCID0010031	99
GOT1	glutamic-oxaloacetic transaminase 1	NC_000010.10,NT_030059.13	qHsaCID0006686	140
SLC16A3	monocarboxylic acid transporter 4	NC_000017.10,NT_010663.15	qHsaCID0014322	180
BGLAP	bone gamma-carboxyglutamate (gla) protein	NC_000001.10,NT_004487.19	qHsaCED0038437	69
GOT2	glutamic-oxaloacetic transaminase 2, mitochondrial	NC_000016.9,NT_010498.15	qHsaCID0013583	152
P4HA1	prolyl 4-hydroxylase	NC_000010.10,NT_030059.13	qHsaCID0009945	148
SLC16A4	monocarboxylic acid transporter 5	NC_000001.10,NT_032977.9	qHsaCED0036763	78
P4HA2	prolyl 4-hydroxylase	NC_000005.9,NT_034772.6	qHsaCID0012216	79
SOX9	SRY (sex determining region Y)-box 9	NC_000017.10,NG_012490.1,NT_010783.15	qHsaCED0021217	77
LDHA	lactate dehydrogenase A	NC_000011.9,NG_011816.1,NT_009237.18,NG_008185.1	qHsaCED0056429	68
P4HA3	prolyl 4-hydroxylase,	NC_000011.9,NT_167190.1	qHsaCID0009995	104
SPP1	secreted phosphoprotein 1	NC_000004.11,NT_016354.19	qHsaCID0012060	99
GLS	glutaminase	NC_000002.11,NT_005403.17	qHsaCID0007574	120
PTGS2	prostaglandin-endoperoxide synthase 2	NC_000001.10,NT_004487.19	qHsaCID0020933	148
UEVLD	UEV and lactate/malate dehydrogenase domains	NC_000011.9,NG_012138.1,NT_009237.18	qHsaCED0036634	75
GLS2	glutaminase 2 mitochondrial	NC_000012.11,NT_029419.12	qHsaCED0002029	72
RUNX2	runt-related transcription factor 2	NC_000006.11,NT_007592.15,NG_008020.1	qHsaCID0006726	80
GLUD1	glutamate dehydrogenase 1	NC_000010.10,NG_013010.1,NT_030059.13	qHsaCED0038578	73
LDHB	lactate dehydrogenase B	NC_000012.11,NT_009714.17,NG_017038.1	qHsaCID0012068	60
SLC16A1	monocarboxylic acid transporter 1	NC_000001.10,NT_032977.9,NG_015880.1	qHsaCID0008777	64
GLUD2	glutamate dehydrogenase 2	NC_000023.10,NG_016456.1,NT_011786.16	qHsaCED0038220	102
LDHC	lactate dehydrogenase C	NC_000011.9,NG_011816.1,NT_009237.18	qHsaCID0018614	130
SLC16A2	monocarboxylic acid transporter 8	NC_000023.10,NG_011641.1,NT_011669.17	qHsaCID0015666	149

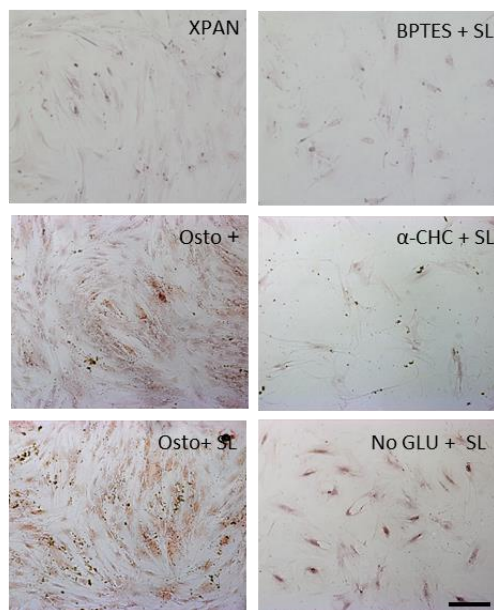


Supplemental Figure 1 - Alizarin red staining of hMSCs after 21 days of incubation in either Xpan or Osteo+ cell culture media.

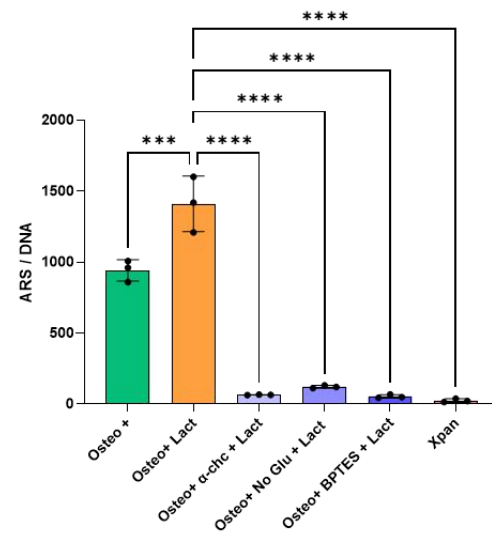
Supplemental Table 2 – Mahalanobis distance, Hotelling T² stats, F-value, Critical F-Values, P-value and significance results of PCA statistical significance analysis

	Mahalanobis Distance	Two-Sample T2 Stats	F-Value	Critical F-Value	P-value	Significance
Osteo vs Xpan	4.121	25.478	9.554	9.552	0.025	YES
Figure 4.3						
Osteo vs Xpan (D0)	1.165	8.151	3.89	3.467	0.2063	NO
Osteo vs Xpan (D3)	1.986	23.665	11.295	3.467	0.105	NO
Osteo vs Xpan (D7)	3.223	62.314	29.748	3.467	0.044	YES
Osteo vs Xpan (D14)	5.32	169.823	81.052	3.467	0.012	YES
Figure 4.5						
Osteo vs Xpan	3.105	49.152	11.264	9.552	0.048	YES
Xpan vs Lact	11.06	183.472	68.802	9.552	0.0005	YES
Lact vs Osteo	6.4905	63.19	23.696	9.552	0.006	YES
Figure 4.6						
Xpan vs Osteo	5.569	139.584	65.431	3.682	0.01	YES
Osteo vs Lact	3.127	43.992	20.621	3.682	0.0472	YES
Lact vs Xpan	3.888	68.019	31.884	3.682	0.0289	YES
Figure 4.8						
Osteo vs Xpan	7.513	84.666	31.75	9.552	0.0034	YES
Xpan vs Lact	5.232	41.059	15.397	9.552	0.0127	YES
Lact vs Osteo	4.942	36.641	13.74	9.552	0.0151	YES

A



B



Supplemental Figure 2 – Supplementation of Osteo + cell culture medium with lactate and metabolic inhibitors. (A) Alizarin red staining of hMSCs after 14 days of cell culture in several cell culture medium formulations. (B) Alizarin red quantification per DNA of hMSCs after 14 days of cell culture