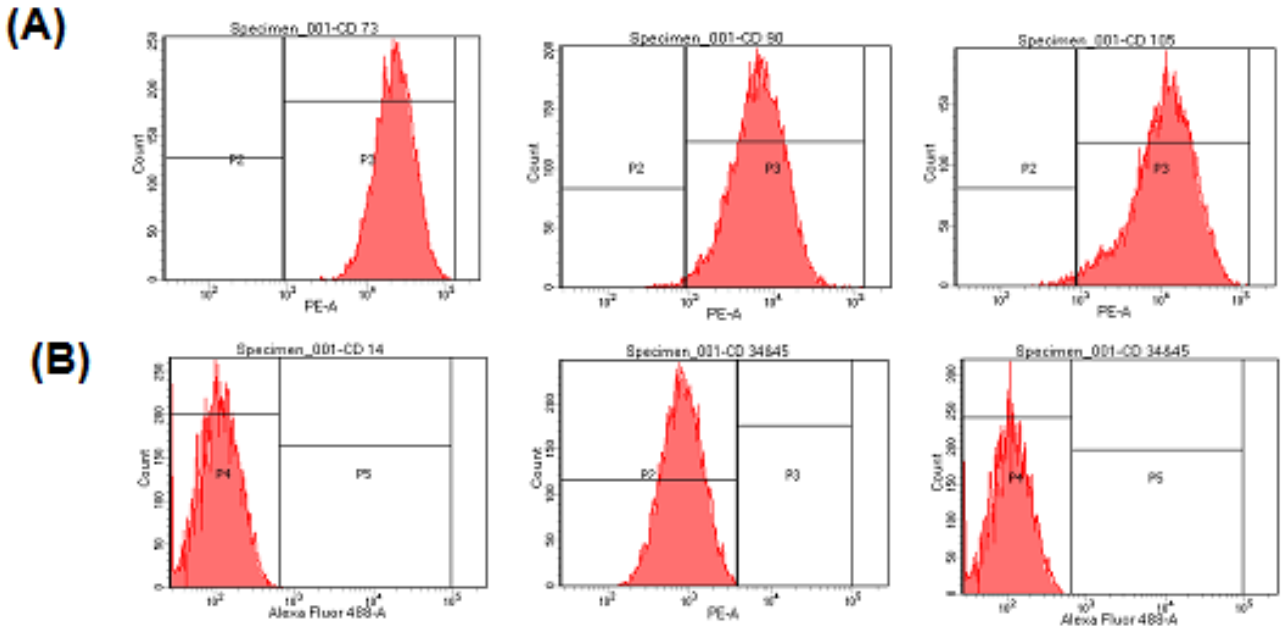
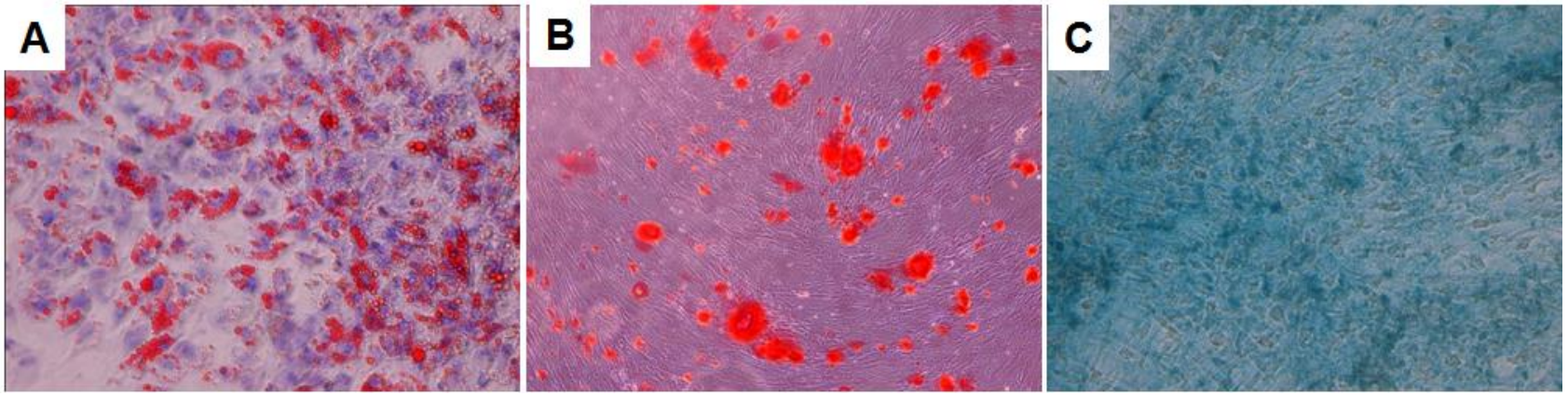


Supplementary figure 1: Flow-cytomtery of MSCs revealed that the cells expressed high levels of CD73, CD90, and CD105 (panel A) but negligible levels of CD14, CD34, and CD45 (Panel B).

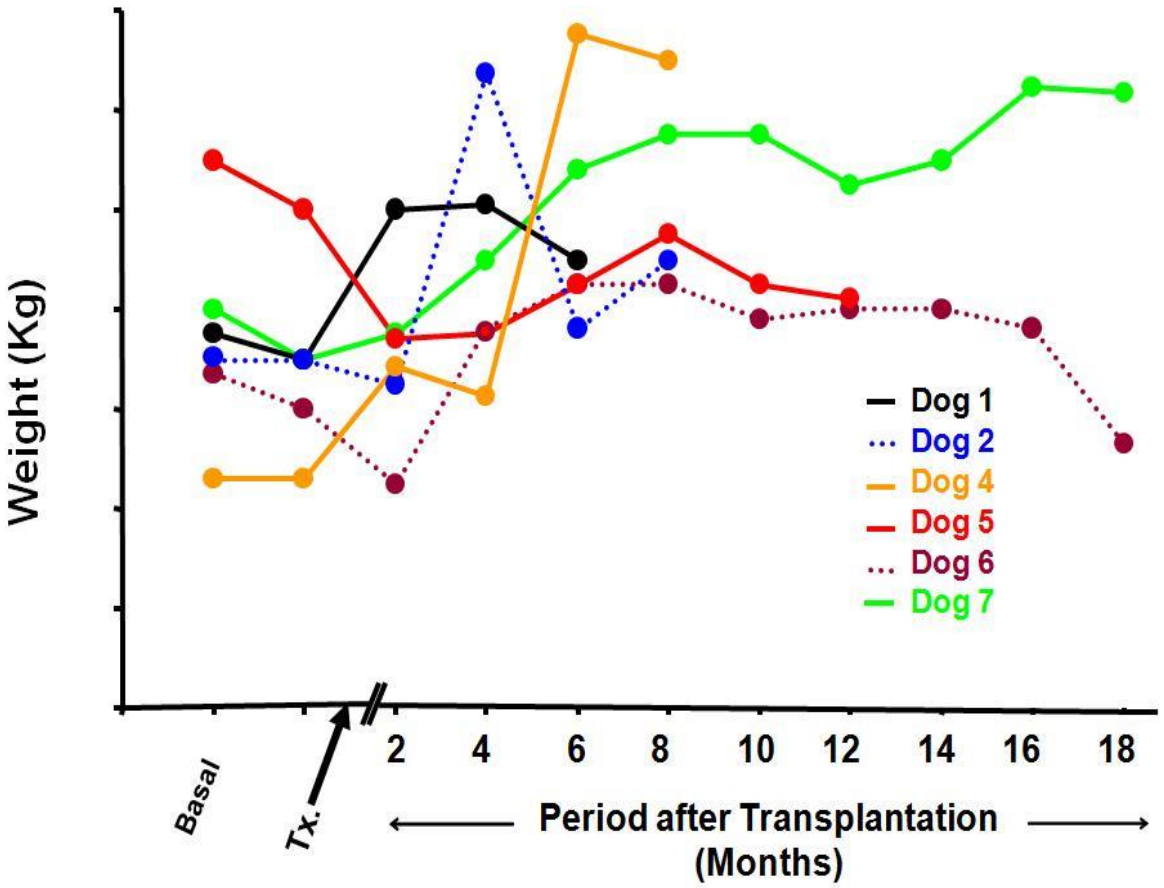


Supplementary figure 2: Multilineage differentiation of BM-MSCs

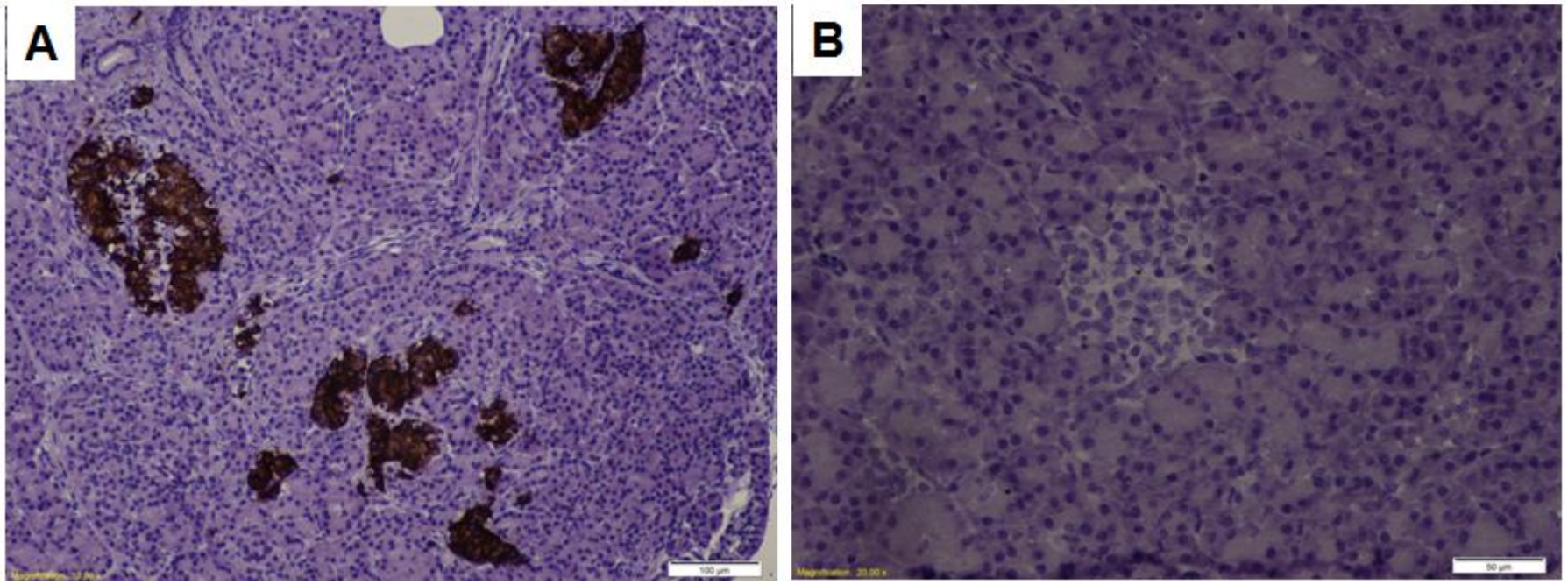
A. Adipogenesis was detected using Oil-Red-O staining

B. osteogenesis was detected using alizarin-red staining

C. chondrogenesis was detected using Alcian blue



Supplementary figure 3: The weight of the treated animals. After induction of diabetes, the weight of all the animals was reduced for a period of 2-3 months. Thereafter, there was a gradual increase even among the 2 dogs in which their diabetes was partially controlled.



Supplementary figure 4: Immunostaining of a dog pancreas.

A. The islets from pancreas harvested from normal untreated dog stained positive for insulin.

B. The islets from a pancreas of a cured dog retrieved 18 months post transplant were atrophic and negatively stained for insulin.

Supplementary table 1: K-value calculations

Normal Dogs	Cured dogs	Partially controlled dogs
$K = \frac{\ln BlS1 - \ln BlS2}{t2 - t1} x100$	$K = \frac{\ln BlS1 - \ln BlS2}{t2 - t1} x100$	$K = \frac{\ln BlS1 - \ln BlS2}{t2 - t1} x100$
$K = \frac{\ln 212 - \ln 108}{120 - 30} x100$	$K = \frac{\ln 290 - \ln 152}{120 - 30} x100$	$K = \frac{\ln 531.5 - \ln 344}{120 - 30} x100$
$K = \frac{5.356 - 4.680}{90} x100$	$K = \frac{5.67 - 5.02}{90} x100$	$K = \frac{6.275 - 5.84}{90} x100$
$K = \frac{0.676}{90} x100$	$K = \frac{0.65}{90} x100$	$K = \frac{0.435}{90} x100$
$K = 0.75\%$	$K = 0.72\%$	$K = 0.48\%$

Supplementary table 2: Fasting Blood Sugar (mg/dl)

	Age months	Basal before induction of diabetes	After induction of diabetes	Period After Transplantation (months)								
				2	4	6	8	10	12	14	16	18
Dog 1	9	76	277	98	80	95						
Dog 2*	8	101	276	223	178	228	188					
Dog 4	8	154	407	125	134	101	77					
Dog 5	7	76	285	73	134	91	95	86	65			
Dog 6*	10	138	346	219	237	216	249	262	245	191	197	225
Dog 7	12	128	285	128	93	82	78	89	76	70	88	72

**** Dogs # 2 and 6: Were partially controlled.***

Dog # 3 : Died 4 days after transplantation from pneumonia.

Supplementary table 3: Human Insulin Levels (µIU/mL)

	Basal before induction of diabetes	After induction of diabetes	Period After Transplantation (months)								
			2	4	6	8	10	12	14	16	18
Dog 1	0.0	0.0	27	22	25						
Dog 2*	0.0	0.0	30	14	26	18					
Dog 4	0.0	0.0	32	18	35	36					
Dog 5	0.0	0.0	17	40	36	32	45	28			
Dog 6*	0.0	0.0	10.5	32	23	17	15	18	15	16	22
Dog 7	0.0	0.0	27	32	36	21	25	32	26	23	33

**** Dogs # 2 and 6: Were partially controlled.***

Dog # 3 : Died 4 days after transplantation from pneumonia.

Supplementary table 4: Human C-peptide Levels (ng/ml)

	Basal before induction of diabetes	After induction of diabetes	Period After Transplantation (months)								
			2	4	6	8	10	12	14	16	18
Dog 1	0.0	0.0	0.3	0.4	0.2						
Dog 2*	0.0	0.0	0.4	0.2	0.3	0.3					
Dog 4	0.0	0.0	0.4	0.3	0.5	0.6					
Dog 5	0.0	0.0	0.3	0.6	0.4	0.4	0.6	0.4			
Dog 6*	0.0	0.0	0.2	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.3
Dog 7	0.0	0.0	0.3	0.3	0.47	0.3	0.3	0.5	0.3	0.35	0.5

**** Dogs # 2 and 6 : Were partially controlled.***

Dog # 3 : Died 4 days after transplantation from pneumonia.

Supplementary table 5: Canine Insulin Levels (µlU/ml)

	Basal before induction of diabetes	After induction of diabetes	Period After Transplantation (months)								
			2	4	6	8	10	12	14	16	18
Dog 1	25	0.0	0.0	1.0	1.0						
Dog 2*	35	1	1.0	0.0	0.0	0.0					
Dog 4	26	0.0	3.0	0.0	0.0	0.0					
Dog 5	35	6.0	2.0	3.0	0.0	0.0	0.0	0.0			
Dog 6*	20	0.0	0.0	2.0	2.0	0.0	2.0	2.0	5.0	0.0	0.0
Dog 7	12	0.0	0.0	4	1.0	1.0	1.0	2.0	0.0	0.0	0.0

**** Dogs # 2 and 6 : Were partially controlled.***

Dog # 3 : Died 4 days after transplantation from pneumonia.

Supplementary table 6: Canine C-peptide Levels (ng/ml)

	Basal before induction of diabetes	After induction of diabetes	Period After Transplantation (months)								
			2	4	6	8	10	12	14	16	18
Dog 1	0.5	0.0	0.0	0.0	0.0						
Dog 2*	0.6	0.1	0.0	0.0	0.0	0.0					
Dog 4	0.4	0.0	0.0	0.0	0.0	0.0					
Dog 5	0.7	0.05	0.0	0.09	0.0	0.0	0.0	0.0			
Dog 6*	0.5	0.0	0.04	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0
Dog 7	0.6	0.0	0.045	0.0	0.0	0.0	0.0	0.07	0.0	0.0	0.0

**** Dogs # 2 and 6 : Were partially controlled.***

Dog # 3 : Died 4 days after transplantation from pneumonia.

Supplementary table 7: Weight (Kg)

	Basal before induction of diabetes	After induction of diabetes	Period After Transplantation (months)								
			2	4	6	8	10	12	14	16	18
Dog 1	13.5	13	16	16.1	15						
Dog 2*	13	13	12.5	18.75	13.6	15					
Dog 4	10.6	10.6	12.85	12.25	19.5	19					
Dog 5	17	16	13.4	13.5	14.5	15.5	14.5	14.2			
Dog 6*	12.7	12	10.5	13.6	14.5	14.5	13.8	14	14	13.6	11.3
Dog 7	14	13	13.5	15	16.8	17.5	17.5	16.5	17	18.45	18.35

**** Dogs # 2 and 6 : Were partially controlled.***

Dog # 3 : Died 4 days after transplantation from pneumonia.

Supplementary table 8: Intravenous glucose tolerance test of the dogs

Serum glucose levels (mg/dl), 6 months post-transplant

Cured Dogs						
Dogs No.	**Basal**	**30 mins.**	**60 mins.**	**90 mins.**	**120 mins.**	**180 mins.**
1	98	249	188	175	132	112
4	122	354	345	266	239	76
5	99	230	168	163	133	109
7	74	331	284	195	171	88
Median	**98.5**	**290**	**236**	**185**	**152**	**98.5**

Partially Controlled Dogs						
Dogs No.	**Basal**	**30 mins.**	**60 mins.**	**90 mins.**	**120 mins.**	**180 mins.**
2	281	553	520	391	341	284
6	238	510	387	398	347	278
Median	**259.5**	**531.5**	**453.5**	**394.5**	**344**	**281**

Supplementary table 9: Intravenous glucose tolerance test *(1g/Kg)* of the Dogs

Serum human insulin (µIU/ml), 6 months post-transplant

Dog No.	Basal	30 mins	60 mins	90 mins	120 mins
1*	28	55	35	34	26
2**	18	22	22	20	19
4*	32	47	42	36	34
5*	25	36	34	33	32
6**	15	35	26	22	20
7*	25	45	38	32	25

- ***Cured dogs***
- ***** Partially controlled***

Supplementary table 10: Intravenous glucose tolerance test *(1g/Kg)* of the Dogs

Serum canine insulin (µIU/ml), 6 months post-transplant

Dog No.	Basal	30 mins	60 mins	90 mins	120 mins
1*	1.0	1.0	1.0	1.0	1.8
2**	0.0	0.0	0.0	0.0	0.0
4*	0.0	0.0	0.0	0.0	0.0
5*	1.0	2.0	2.0	2.0	1.0
6**	2.0	5.0	4.0	3.0	3.0
7*	1.0	3.0	2.0	2.0	2.0

**** Cured dogs***

***** Partially controlled***

Supplementary table 11: Intravenous glucose tolerance test for normal dogs (1mg/kgm)

Serum glucose levels (1mg/dl)

Normal Dogs					
Dogs No.	**Fasting**	**30 mins.**	**60 mins.**	**90 mins.**	**120 mins.**
A	154	375	255	182	150
B	101	157	116	114	108
C	95	212	159	110	97
Median	**101**	**212**	**159**	**114**	**108**

Supplementary table 12: Relative gene expression

	Undiff	End of in vitro diff	6 months	8 months	12 months	18 months	Human Islets
PDX1	0.0004	0.0051	0.0324			0.020905	1
	0.0000603	0.000224	0.000779			0.00296	1
	0.000924	0.00145	0.0249132	0.019375			1
	0.0000603	0.00021		0.000713			1
	0.000527	0.0021		0.024369			1
	0.0004	0.000224		0.1058322	0.036478		1
Mean	**0.000395267**	**0.00201333**	**0.019364067**	**0.037572300**	**0.036478**	**0.011932500**	1
INS		0.0004	0.0056			0.021344	1
	0.000018	0.000126	0.004437			0.021487	1
	0.0000407	0.000193	0.0086437	0.001069			1
	0.000018	0.0000654		0.002753			1
	0.0000147	0.0004		0.002577			1
		0.000126		0.0035353	0.017259		1
Mean	**0.000022850**	**0.000218400**	**0.006226900**	**0.002483575**	**0.017259**	**0.021415500**	1
GCG	0.0007	0.0043	0.0209			0.016746	1
	0.000057	0.00071	0.013697			0.001277	1
	0.000054	0.002228	0.0055889	0.014202			1
	0.0007	0.000744		0.005436			1

		0.0043		0.03067			1
		0.00071		0.0318758	0.025307		1
Mean	**0.000378500**	**0.002165333**	**0.013395300**	**0.020545950**	**0.025307**	**0.009011500**	1
SST	0.0008	0.0053	0.0585			0.010237	1
	0.0000	0.0000632	0.057189			0.015299	1
	0.0000	0.00613	0.1002171	0.100134			1
	0.0008	0.002593		0.040525			1
		0.0053		0.184336			1
		0.0000632		0.0518038	0.033623		1
Mean	**0.000400000**	**0.003241567**	**0.071968700**	**0.094199700**	**0.033623**	**0.012768000**	1

Glut2		0.0006	0.0462			0.118257	1
	0.000291	0.000296	0.014067			0.016746	1
		0.000472	0.0898376	0.011486			1
	0.000291	0.000282		0.00174			1
		0.0006		0.020404			1
		0.000296		0.0118063	0.045602		1
Mean	**0.000291000**	**0.000424333**	**0.050034867**	**0.011359075**	**0.045602**	**0.067501500**	1
GCK	0.0005	0.0129	0.0210			0.009552	1
	0.0000493	0.000184	0.057648			0.010368	1
		0.003354	0.0217729	0.008975			1
	0.0000493	0.001221		0.000989			1
		0.0129		0.011785			1
	0.0005	0.000184		0.0062738	0.051431		1
Mean	**0.000274650**	**0.005123833**	**0.033473633**	**0.007005700**	**0.051431**	**0.009960000**	1
Neurog3	0.0009	0.0119	0.0957				1
	0.0000	0.000171	0.007147				1
	0.035355	0.035403	0.4329334	0.1931			1
	0.01093	0.258947		0.267724			1
	0.0009	0.0119		0.083565	0.108045	0.035072	1
		0.000171		0.062727		0.071794	1
Mean	**0.009600**	**0.0530820**	**0.1785933**	**0.1517790**	**0.108045**	**0.0534330**	1
Pax4	0.0000	0.0010	0.0548				1
	0.0000	0.000408	0.003721				1
	0.000782	0.001642	0.004928	0.085034			1
	0.000542	0.000554		0.174949			1
	0.00001	0.001		0.001651	0.00000		1
		0.000408		0.009713		0.005759	1
Mean	**0.000240**	**0.0008353**	**0.0211496667**	**0.067836750**	**0.00000**	**0.005759**	1

	Undiff	End of in vitro diff	6 months	8 months	12 months	18 months	Human Islets
RFX6	0.0011	0.0015	0.0139				1
	0.0000	0.0000	0.000877				1
	0.000883	0.000589	0.0071395	0.010434			1
	0.00119	0.000379		0.015772			1
	0.0011	0.0015			0.05685		1
		0.00001		0.0078789		0.042689	1
Mean	**0.0008200**	**0.0006630**	**0.00730533**	**0.01136133**	**0.05685**	**0.042689**	1
Neurod1	0.0196	0.0113	0.1200				1
	0.000531	0.0000	0.009164				1
	0.012972	0.004245	0.0468788	0.066899			1
	0.0057	0.001929		0.116598			1
	0.0196	0.0113			0.543067		1
		0.00001				0.632878	1
Mean	**0.011660**	**0.0047973**	**0.0586806667**	**0.09174850**	**0.543067**	**0.632878**	1
Nes	0.2883	0.5838	0.0227				1
	0.0045	0.0018	0.001287				1
	0.086009	0.63728	0.0585288	0.001093			1
	0.089522	0.217161		0.04292			1
	0.2883	0.5838		0.001347	0.003464	0.018315	1
		0.0018		0.0209213		0.016289	1
Mean	**0.1513200**	**0.337606833**	**0.0275050**	**0.016570250**	**0.003464**	**0.0173020**	1
MafA	0.0281	0.0061	0.0675				1
	0.000127	0.004301	0.010336				1
	0.002699	0.005563	0.0328061	0.028626			1
	0.013335	0.004409		0.025852			1
	0.0281	0.0061		0.018011	0.043439	0.00559	1
		0.004301		0.0223155		0.010525	1
Mean	**0.014440**	**0.0051290**	**0.0368806667**	**0.0237010**	**0.043439**	**0.0080575**	1

	Undiff	End of in vitro diff	6 months	8 months	12 months	18 months	
MafB	0.0079	0.0408	0.0094				1
	0.039046	0.282286	0.001359				1
	0.004155	0.018199	0.0240565	0.003422			1
	0.011023	0.006499		0.002712			1
	0.0079	0.0408		0.002107	0.028425		1
		0.282286				0.003545	1
Mean	**0.013980**	**0.1118116667**	**0.0116050**	**0.0027470**	**0.028425**	**0.003545**	1
OCT4	0.0024	0.0695	0.0681				1
	0.000735	0.001563	0.003448				1
	0.009347	0.046071	0.02785	0.000454			1
	0.007716	0.013185		0.003321			1
	0.0024	0.0695		0.001568	0.0000	0.002131	1
		0.001563		0.0114751		0.000772	1
Mean	**0.004500**	**0.0335636667**	**0.0331326667**	**0.00420450**	**0.0000**	**0.00145150**	