

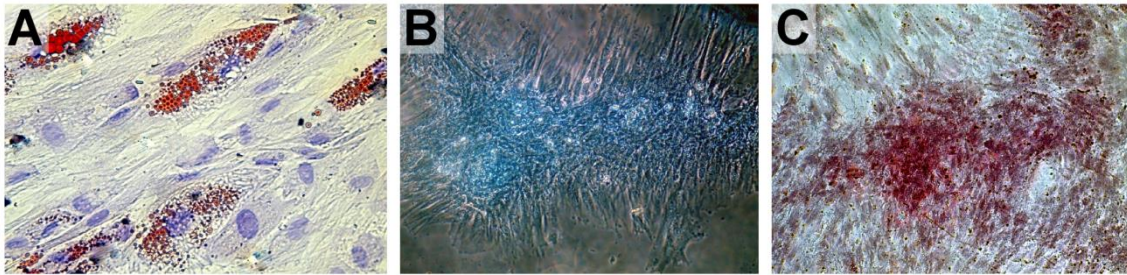
Supplementary figure 1.

Multilineage differentiation of HBM-MSCs.

(A) Adipogenesis was detected using oil-Red-O staining.

(B) Chondrogenesis was detected using alcian blue staining.

(C) Osteogenesis was detected using alizarin-red staining



Supplementary Table 1. Flow cytometric quantitation of surface markers of the undifferentiated MSCs

Donor	CD 14	CD 34	CD 45	CD 73	CD 90	CD 105
1	1.7	1.2	0.05	99.95	98.05	99.9
2	2.6	0.2	0.1	99.5	99.4	96.4
3	1.9	1.4	0.1	92	99.6	94
4	1.3	2.2	0.3	92	98.4	93
5	2.2	1.5	0.2	91.2	99.5	97.4
6	1.9	2.2	0.1	99.9	99.5	97.7
Mean±SD	1.9±0.5	1.3±0.7	0.2±0.1	96±4	99±0.7	96±2.5

Supplementary Table 2: Oral glucose tolerance test (1gm/Kg) of transplanted nude mice (2, 4, and 12 weeks after transplantation)

	Zero min		30 min		60 min		90 min		120 min	
	Blood Glucose mg/dl	C-peptide ng/ml	Blood Glucose mg/dl	C-peptide ng/ml	Blood Glucose mg/dl	C-peptide ng/ml	Blood Glucose mg/dl	C-peptide ng/ml	Blood Glucose mg/dl	C-peptide ng/ml
2 weeks	196	0.3	277	0.7	189	0.4	63	0.2	77	0.3
	133	0.2	385	0.9	325	0.7	260	0.4	190	0.3
Mean±SD	164.5±44.55	0.25±0.071	331±76.37	0.8±0.14	257±96.17	0.55±0.21	161.5±139.3	0.3±0.14	133.5±79.9	0.3±0
4 weeks	162	0.18	200	0.5	101	0.4	79	0.2	55	0.09
	131	0.3	291	0.8	252	0.6	189	0.5	101	0.2
Mean±SD	146.5±21.9	0.24±0.085	245.5±64.3	0.65±0.21	176.5±106.8	0.5±0.14	134±77.8	0.35±0.21	78±32.5	0.145±0.078
12 weeks	83	0.3	167	0.4	121	0.3	45	0.1	45	0.1
	106	0.4	176	0.4	180	0.5	131	0.4	86	0.2
Mean±SD	94.5±16.26	0.35±0.07	171.5±6.36	0.4±0.0	150.5±41.71	0.4±0.141	88±60.8	0.25±0.21	65.5±29.0	0.15±0.07

Supplementary Table 3: Percentage of in vitro and in vivo insulin-positive cells

	In vitro	1 week after transplantation	2 weeks after transplantation	4 weeks after transplantation	12 weeks after transplantation
Percentage of insulin positive cells	2	8.9	16.4	15.2	14.1
	3.4	14.6	15.7	15.7	18.6
	2.2	14.3	22.8	19.8	16.6
	1.47	12.9	17	16.6	16.5
	2.6	10	20.4	24	17.5
	3	13	13.2	16.96	20
Mean±SD	2.44±0.70	12.28±2.32	17.58±3.45	18.04±3.33	17.22±2.02
P-Value	<0.001	0.026	0.694	0.605	

Supplementary Table 4: Relative gene expression (Human islets as a control)

	INS	GCG	PDX1	SST	NGN3	PAX4	GCK	RFX6	GLUT2	Neurod1	NES	MafA	MafB	OCT4
Undiff. MSCs	0.00000	0.00003	0.00001	0.00010	0.01866	0.00876	0.00018	0.04859	0.00362	0.05892	0.00212	0.00128	0.00682	0.00045
	0.00000	0.00020	0.00014	0.00010	0.00007	0.00012	0.00030	0.00022	0.00028	0.00057	0.00017	0.00082	0.00088	0.00012
	0.00000	0.00024	0.00012	0.00026	0.00020	0.00003	0.00009	0.00017	0.00006	0.00098	0.00138	0.00020	0.09251	0.00007
	0.00000	0.00024	0.00012	0.00026	0.00020	0.00003	0.00009	0.00017	0.00006	0.00098	0.00138	0.00020	0.09251	0.00007
	0.00000	0.00024	0.00013	0.00026	0.00020	0.00003	0.00009	0.00017	0.00006	0.00098	0.00138	0.00020	0.09251	0.00007
	0.00000	0.00006	0.00004	0.00007	0.00007	0.00007	0.00007	0.00001	0.00050	0.00001	0.00012	0.10162	0.00010	0.01949
Median	0	0.00022	0.00012	0.00018	0.0002	0.00005	0.0009	0.00019	0.00006	0.00098	0.00138	0.0002	0.056	0.00007
End of In vitro Diff.	0.00145	0.00035	0.00043	0.00036	0.00138	0.00625	0.00019	0.00142	0.00018	0.00085	0.00229	0.00035	0.01095	0.00031
	0.00119	0.00129	0.00059	0.00027	0.00035	0.00008	0.00136	0.00140	0.00067	0.00848	0.00214	0.00030	0.01086	0.00014
	0.00142	0.00207	0.00134	0.00235	0.00202	0.00038	0.00026	0.00173	0.00108	0.00853	0.00452	0.00202	0.02456	0.00079
	0.00018	0.00041	0.00062	0.00043	0.00047	0.00015	0.00014	0.00073	0.00037	0.00201	0.00699	0.00060	0.04656	0.00022
	0.00073	0.00114	0.00072	0.00033	0.00145	0.00008	0.00052	0.00263	0.00041	0.00528	0.00134	0.00080	0.01564	0.00015
	0.00003	0.00010	0.00077	0.00005	0.00048	0.00014	0.00096	0.00141	0.00008	0.00125	0.00021	0.00176	0.05711	0.00049
Median	0.00096	0.000775	0.00067	0.000345	0.00093	0.000145	0.00039	0.00141	0.00039	0.00364	0.00221	0.0007	0.0201	0.00026
1 Week After Transpl.	0.01753	0.02166	0.10124	0.06044	0.07383	0.06595	0.00823	0.07506	0.02126	0.25753	0.13076	0.16053	0.03270	0.03120
	0.00983	0.01006	0.00405	0.00233	0.00270	0.00072	0.01208	0.01246	0.00461	0.01536	0.00342	0.00228	0.00813	0.00030
	0.00337	0.00358	0.00247	0.00159	0.00190	0.00029	0.00354	0.00293	0.00168	0.00821	0.00129	0.00080	0.00646	0.00045
	0.00272	0.00348	0.00251	0.00192	0.00235	0.00029	0.00252	0.00253	0.00120	0.02095	0.00223	0.00450	0.00263	0.00104
	0.00174	0.00130	0.00092	0.00302	0.00335	0.00095	0.00127	0.00680	0.00097	0.01460	0.00424	0.00156	0.00225	0.00019
	0.00150	0.00104	0.00532	0.00231	0.00324	0.00000	0.00125	0.00264	0.00120	0.01632	0.01064	0.00269	0.16885	0.00000
Median	0.0030	0.0035	0.0032	0.00232	0.00297	0.0005	0.003	0.00486	0.00144	0.01584	0.00383	0.00248	0.00729	0.00037

	INS	GCG	PDX1	SST	NGN3	PAX4	GCK	RFX6	GLUT2	Neurod1	NES	MafA	MafB	OCT4
2 Weeks After Transpl.	0.00370	0.00750	0.01450	0.00740	0.04060	0.00890	0.00440	0.04710	0.01550	0.08600	0.02050	0.01900	0.66910	0.00390
	0.02769	0.02221	0.00597	0.00120	0.00147	0.00057	0.02683	0.03002	0.00892	0.01859	0.00111	0.00147	0.00155	0.00049
	0.00209	0.00180	0.00083	0.00317	0.00204	0.00158	0.00101	0.00180	0.00107	0.01195	0.00193	0.00156	0.03765	0.00025
	0.00068	0.00228	0.00349	0.00299	0.00619	0.00346	0.00267	0.00562	0.00289	0.01366	0.05188	0.03236	0.26840	0.00631
	0.00088	0.00285	0.00227	0.00440	0.00337	0.00252	0.00256	0.00611	0.00235	0.01580	0.02521	0.00335	0.13775	0.00179
	0.00182	0.00511	0.00459	0.00774	0.00410	0.00000	0.00000	0.00411	0.00185	0.07006	0.00440	0.00231	0.08500	0.00193
Median	0.0019	0.00398	0.004	0.0037	0.0037	0.002	0.0026	0.0058	0.0026	0.0171	0.012	0.0028	0.111	0.0018
4 Weeks After Transpl.	0.00457	0.01247	0.00462	0.04897	0.04234	0.00476	0.01019	0.01439	0.01226	0.00830	0.01109	0.01061	0.00638	0.00208
	0.00773	0.01668	0.00656	0.03263	0.01506	0.00384	0.00295	0.01082	0.00356	0.07379	0.00396	0.01183	0.00776	0.00293
	0.01515	0.01450	0.00571	0.00191	0.00403	0.00101	0.01613	0.01783	0.00511	0.02178	0.00198	0.00470	0.00533	0.00156
	0.01928	0.01977	0.00616	0.00292	0.00568	0.00126	0.02015	0.02631	0.00697	0.03151	0.00263	0.00362	0.00278	0.00160
	0.01729	0.01545	0.00790	0.00371	0.00724	0.00178	0.01908	0.02655	0.00670	0.02968	0.00501	0.01140	0.00719	0.00297
	0.01987	0.01907	0.00739	0.00303	0.00338	0.00078	0.01688	0.01738	0.00642	0.02172	0.00393	0.00397	0.01008	0.00098
Median	0.016	0.016	0.006	0.0033	0.0064	0.0015	0.0165	0.0176	0.0065	0.0257	0.0039	0.0076	0.0067	0.0018
12 Weeks After Transpl.	0.0041	0.00222	0.00126	0.00148	0.00284	0.00362	0.00118	0.00881	0.00109	0.01188	0.00059	0.00513	0.25618	0.00048
	0.0090	0.00192	0.00347	0.00460	0.00431	0.00056	0.00186	0.02035	0.00226	0.00991	0.00365	0.04579	0.75626	0.00513
	0.0066	0.02418	0.02521	0.01884	0.02628	0.00556	0.01201	0.02352	0.01209	0.11908	0.01795	0.03467	0.01399	0.01136
	0.0048	0.00798	0.01278	0.01342	0.01924	0.00430	0.01278	0.00739	0.00549	0.12500	0.01379	0.01820	0.08077	0.00455
	0.0058	0.00635	0.00534	0.01024	0.01060	0.00609	0.01168	0.00534	0.00744	0.03103	0.00626	0.01038	0.03467	0.00288
	0.0059	0.03013	0.01959	0.00395	0.00000	0.00000	0.00394	0.00491	0.07214	0.01974	0.00377	0.00830	0.05253	0.00000
Median	0.00585	0.0071	0.009	0.007	0.007	0.0039	0.0078	0.0081	0.0064	0.0253	0.005	0.014	0.066	0.0037