

Bone Marrow Mesenchymal Stem Cells (BM-MSCs) Improve Heart Function in Swine Myocardial Infarction Model through Paracrine Effects

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Supplemental Figure Legend

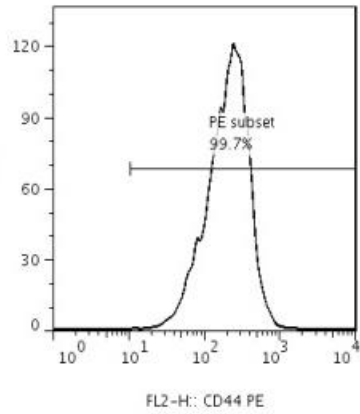
Fig. S1 Phenotype identification of cultured BM-MSCs. BM-MSCs characterized by flow cytometry were positive for CD44, CD90, and negative for CD34, CD45 and HLA-DR.

Fig. S2 AHA left ventricular 17 segments diagram

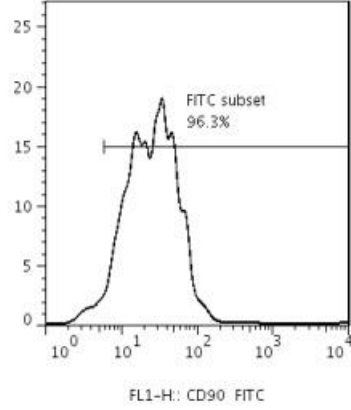
Fig. S3 PET QPS software results analysis diagram

Fig. S4 Histology analysis of cardiac tissue sections from the BM-MSCs injection regions. Representative photographs of DAPI-positive nuclei of transplanted BM-MSCs at week 1 and week 4.

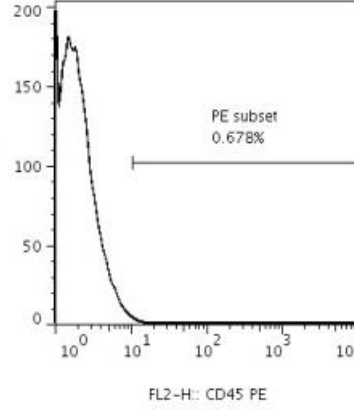
CD44



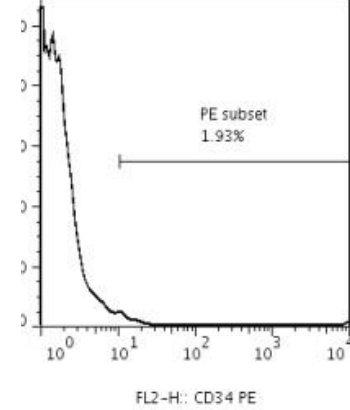
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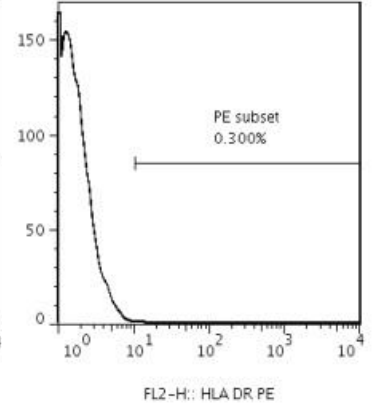
CD45



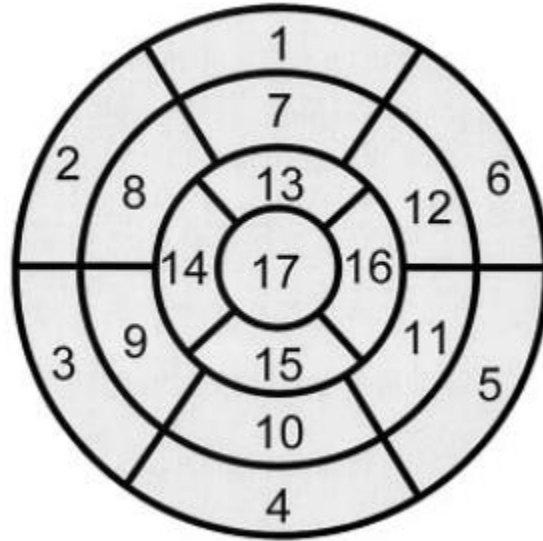
CD34



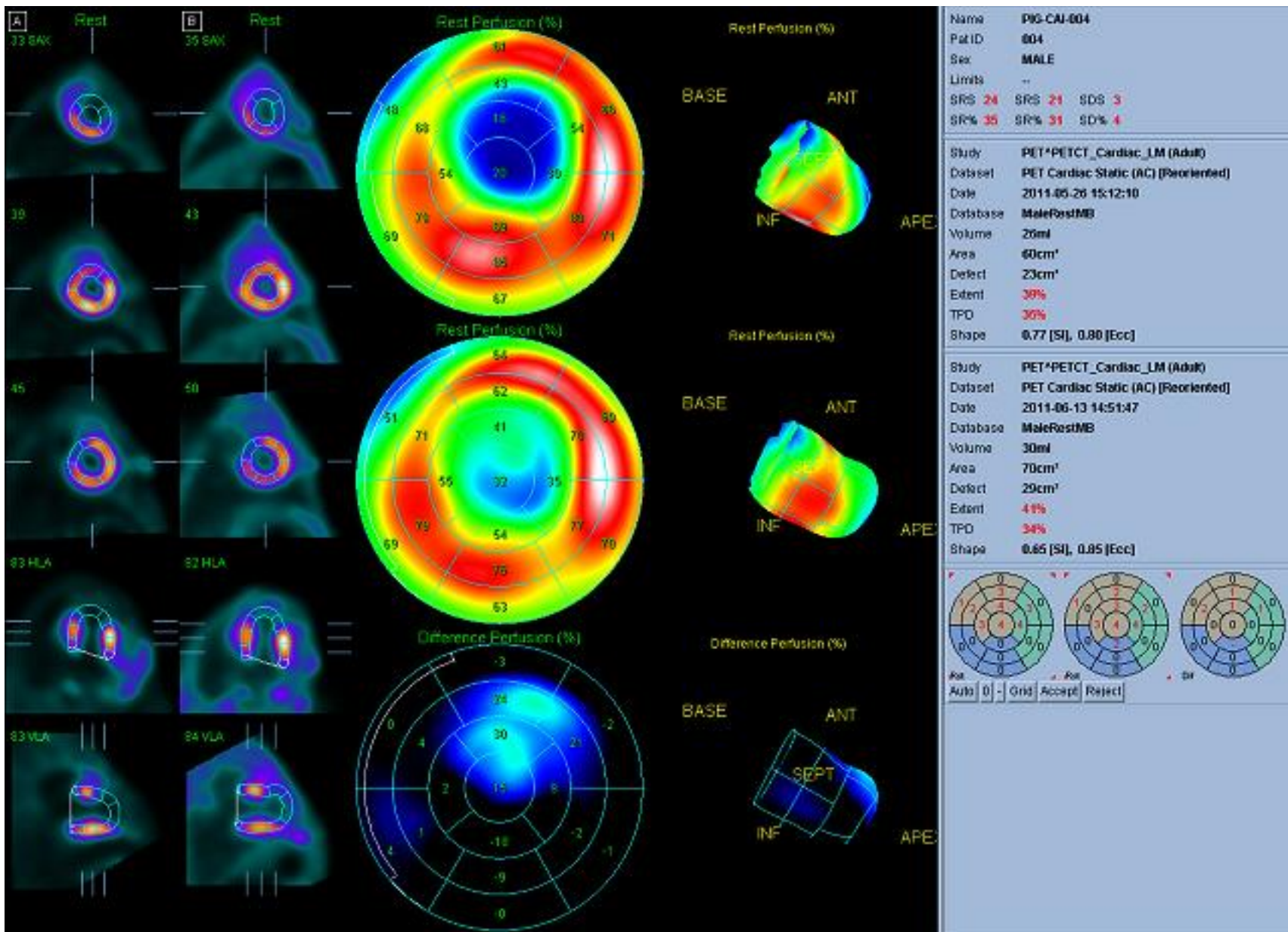
HLA DR



Left Ventricular Segmentation

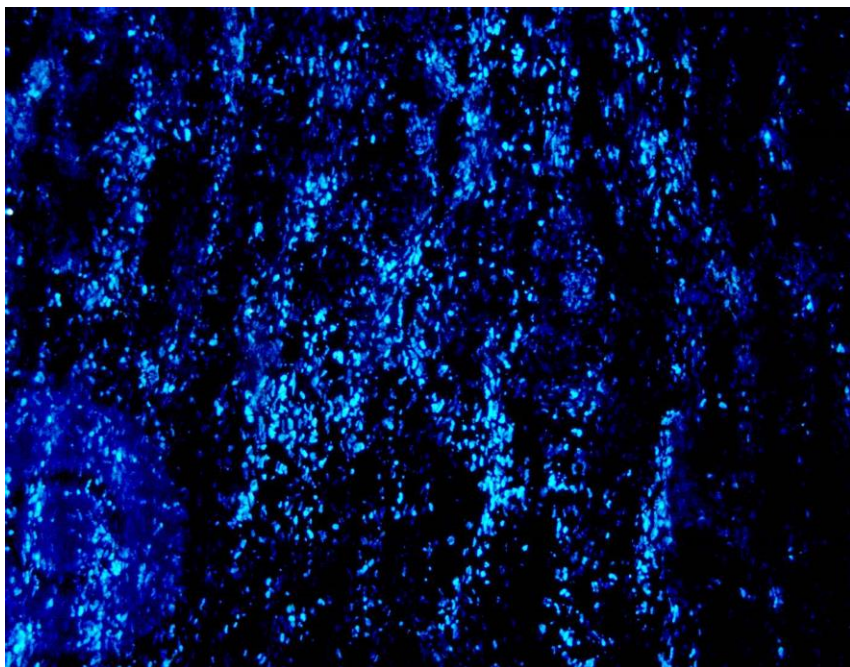


- | | | |
|------------------------|-----------------------|---------------------|
| 1. Basal anterior | 7. Mid anterior | 13. Apical anterior |
| 2. Basal anteroseptal | 8. Mid anteroseptal | 14. Apical septal |
| 3. Basal inferoseptal | 9. Mid inferoseptal | 15. Apical inferior |
| 4. Basal inferior | 10. Mid inferior | 16. Apical lateral |
| 5. Basal inferolateral | 11. Mid inferolateral | 17. Apex |
| 6. Basal anterolateral | 12. Mid anterolateral | |

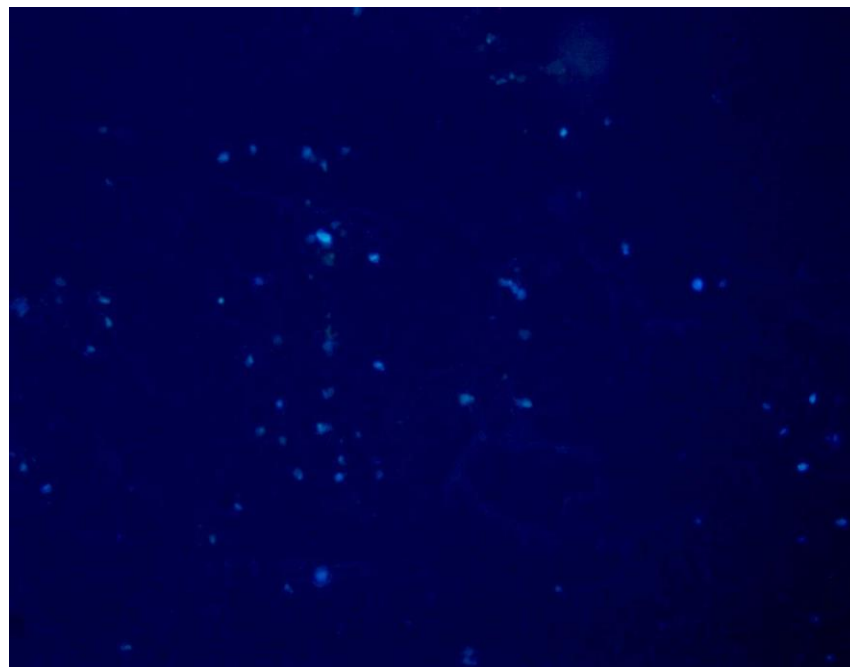


Supplemental Figure 3

MSCs-1W



MSCs-4W



Supplemental Table 1. Primers Used in This Study

Gene symbol	Primer sequence (5'-3')	Product size (bp)
GLUT1	F: CCGCTTCCTGCTCATCAACC	138bp
	R: ACCTTCTTCTCCCGCATCATCT	
GLUT4	F: AGTATGTTGCGGATGCTATGGG	103 bp
	R: CCTCGGGTTTCAGGCACTT	
PFK	F: TGTTGAACGACCTCCAGAAAGC	119 bp
	R: CATATCGGTGCCGCAAAAGTC	
GAPDH	F: CTCCCCGTTTCGACAGACAG	90 bp
	R: GCCAAATCCGTTCACTCCGAC	
PI3K	F: GCTGGTCCAGGCTGTGAAAT	113 bp
	R: TCAAGAACCAAAACAAGAAGTGACC	
Akt	F: GATCATGCAGCACCGTTTCTTC	112 bp
	R: GAAATACCTGGTGTCCGTCTCG	
mTOR	F: CCAACAAGATCCTGAAGAACATGT	150 bp
	R: CCCCGAAGTACAAGCGAGAC	
4E-BP1	F: TGC AGC CAG ACC CCA AGC CG	300bp
	R: CCG CTT ATC TTC TGG GCT ATT G	
p70s6k	F: AGG AGG CGG GAC GGC TTT TAC C	586bp
	R: CCA AGT AAA AGC AGG CAG TGT C	
β -Actin	F: TGAGATTGGCATGGCTTTATTTGG	122 bp
	R: GTCACCTTCACCGTTCCAGTTT	

After an initial denaturation at 95 °C for 10 min amplification was performed with 40 cycles of 95 °C for 15 s, 60 °C for 60 s.

Supplemental Table 2. Myocardial metabolism assessment of PET at week 4

	Control (n=10)			MSCs (n=10)			<i>P</i>
	1 week	4 week	difference	1 week	4 week	difference	
Minimum MSI	35.70±3.02	37.40±2.28	1.70±2.00	22.10±3.18	34.00±4.25	11.90±2.93	0.012
Summed MSI	1084.00±21.15	1089.90±24.47	5.90±27.98	1013.50±29.37	1075.50±28.30	62.00±23.30	0.005
SRS	20.90±2.11	19.80±1.37	-1.10±1.57	23.80±1.58	20.20±2.24	-0.36±1.53	0.287
SRS (%)	30.60±3.09	29.00±2.05	-1.60±2.28	35.10±2.34	29.80±3.31	-5.30±2.23	0.305
Defect (cm ²)	25.50±2.60	29.50±3.31	4.00±1.90	28.90±2.48	27.20±4.06	-1.70±2.42	0.081
Extent (%)	38.90±3.67	39.90±2.64	1.00±2.09	42.40±2.46	37.70±3.79	-4.70±2.60	0.119
TPD (%)	31.50±2.83	31.80±2.12	0.30±1.37	36.00±2.57	31.70±3.52	-4.30±2.57	0.172
Abnormal segments	6.00±0.60	5.60±0.72	-0.40±0.75	6.90±0.50	5.70±0.79	-1.20±0.80	0.421
Summed MSI in abnormal segments	314.80±30.50	337.70±39.55	22.90±18.52	323.60±18.99	384.60±37.13	61.00±21.24	0.226
Mean MSI in abnormal segments	52.74±1.66	55.70±2.20	2.95±2.60	48.14±2.71	56.25±3.54	8.12±2.25	0.364

P value, Comparison of the difference between the two groups.

Supplemental Table 3. Control-4W Group and MSCs-4W Group regional myocardial metabolism assessment of PET

	Control-4W Group (n=10)			MSCs-4W Group (n=10)			<i>P</i>
	1 week	4 week	difference	1 week	4 week	difference	
apical-anterior	40.10±3.94	44.50±3.36	4.60±4.98	32.00±5.35	44.10±5.90	14.80±4.10	0.028
mid-anterior	64.80±3.33	70.00±4.62	5.60±3.75	57.40±4.00	65.30±4.66	9.30±2.91	0.545
apical-septal	55.50±3.21	59.40±2.53	4.40±3.71	52.00±2.55	61.60±2.67	12.49±3.95	0.289
mid-anteroseptal	64.10±2.75	68.10±3.29	4.30±3.03	62.80±2.85	69.50±2.17	7.10±2.51	0.623

P value, The comparison of the difference between the two groups.

Supplemental Table 4. Control-4W Group and MSCs-4 W Group cardiac function assessment

	Control-4W Group (n=10)			MSCs-4 W Group (n=10)			<i>P</i>
	1 week	4 week	difference	1 week	4 week	difference	
LVEF (%)	48.72±2.33	49.20±3.13	0.47±2.13	47.54±2.43	54.41±2.62	6.87±1.48	0.023
EDV (ml)	50.00±4.82	53.26±4.58	3.26±3.95	53.57±1.66	52.22±2.44	-1.35±1.48	0.496
ESV (ml)	25.67±2.79	26.73±2.51	1.06±1.96	27.07±1.67	22.85±1.91	-4.22±0.97	0.009
SV (ml)	24.33±2.49	26.51±2.99	2.18±2.35	26.52±1.46	29.35±1.84	2.83±1.11	0.650
CO (L/min)	1.73±0.17	1.95±0.23	0.22±0.27	1.96±0.13	2.23±0.14	0.27±0.10	0.472
CI (L/min·m ²)	2.19±0.21	2.37±0.26	0.18±0.32	2.48±0.18	2.83±0.14*	0.36±0.14	0.325
LVMASS-ED (g)	29.08±1.95	29.27±2.03	0.19±1.52	28.36±2.14	27.05±2.02	-1.31±1.74	0.631

LVEF, left ventricular ejection fraction; EDV, end-diastolic volume; ESV, end-systolic volume; SV, stroke volume; CO, cardiac output; CI, cardiac index; LVMASS-ED, left ventricular mass- end diastolic.

* The difference of MSCs-4W Group and Control-4W Group at the 4th week, are statistically significant, *P* <0.05

P value, The comparison of the difference between the two groups