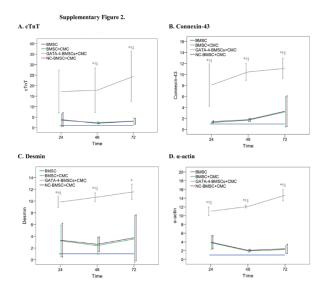
**Supplementary Figure 1.** Immunofluorescence detection for (A) cTnT, (B) connexin-43, (C) desmin, and (D) α-actin in in cardiomyocytes (CMC) while co-cultured with GATA-4 overexpressed BMSCs. Blue: the nuclei were stained with DAPI. Red: Dil labeled BMSCs. Green: labeled cTnT, connexin-43, desmin, or α-actin. Orange or Yellow: Red and Green overlapping. Before co-cultured, the BMSCs were labeled with Dil, but single cultured BMSCs were not labeled with Dil.

Supplementary I cTnT	figure 1. 24h	48h	72h
GATA-4-BMSC+ CMC			7.8
Vector-BMSCs+C MC			
BMSCs+CMC			
BMSCs			
connexin-43	24h	48h	72h
GATA-4-BMSC+ CMC			
Vector-BMSCs+C MC			No.
BMSCs+CMC			
BMSCs			
Desmin	24h	48h	72h
GATA-4-BMSC+ CMC			
Vector-BMSCs+C MC			
BMSCs+CMC			
BMSCs			
a antin	24h	48h	71.
a-actin	240	400	72h
GATA-4-BMSC+ CMC		5 13 4	

GATA-4-BMSC+ CMC		
Vector-BMSCs+C MC		
BMSCs+CMC		
BMSCs		

**Supplementary Figure 2.** Comparisons between groups in mRNA expression of myocardial infarction markers: (A) cTnT, (B) connexin-43, (C) desmin, and (D)  $\alpha$ -actin. \* p<0.05, represented significantly different with BMSC group; † p<0.05, represented significantly different with BMSC+CMC group; ‡ p<0.05, represented significantly different with NC-BMSC+CMC group



**Supplementary Figure 3.** Evaluation of heart region fluorescence intensity of BMSC after transplanted BMSC in the myocardial infarction (MI) mouse model. (A) After transplanted BMSC (A) 48 hr, (B) 72hr, and (C) 96 hr. From left to right is BMSC MI, NC-BMSC MI, GATA-4-BMSC MI, control (without transplanted BMSC) MI, normal mice without feed doxycycline, normal mice feed doxycycline.

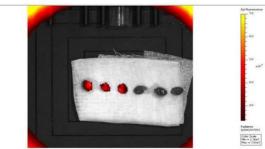
## Supplementary Figure 3. (A).

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