

SUPPLEMENTAL MATERIAL

Magnetic Resonance Imaging of Cardiac Strain Pattern Following Transplantation of Human Tissue Engineered Heart Muscles

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Supplemental Table 1. Global measurements of systolic function at D-1 and D28

Conventional measurements	Healthy (n=6)	Control (n=10)	EHM (n=12)
LV mass (mg)	472.1±14.1	506.2±10.8	554.4±13.9
EDV (μl)	371.3±12.7	449.6±17.9	493.1±11.9
ESV (μl)	100.4±4.7	209.4±20.1	236.4±10.9
D-1 SV (μl)	270.9±8.3	240.2±7.1	256.7±5.4
EF (%)	73.0±0.5	54.2±2.8	52.3±1.3
Scar [μl]	0	43.6±4.6	50.9±5.2
Infarct [% of LVM]	0	8.3±1.3	9.7±1.0
LV mass (mg)		476.4±9.0	498.4±15.1
EDV (μl)		517.3±19.1	546.1±10.6
ESV (μl)		289.0±21.4	294.4±9.4
D28 SV (μl)		228.3±10.0	251±10.2
EF (%)		43.8±2.5	46.0±1.5
Scar [μl]		44.6±2.5	45.2±2.3
Infarct [% of LVM]		9.2±1.1	9.7±0.7

Results are presented as mean ± SEM. LV: left ventricle; EDV: end-diastolic volume; ESV: end-systolic volume; SV: stroke volume; EF: ejection fraction; CO: cardiac output; Infarct (% of LVM): percentile of scar mass to left ventricle mass.

Supplemental Table 2. Global and regional strains measured by cardiac MRI and ultrasound at D-1 and D28

Rat No.	Circumferential Strain E_{CC} (%)												
	MRI						Ultrasound						
	D-1			D28			D-1			D28			
	<i>G</i>	<i>S</i>	<i>RZ</i>	<i>G</i>	<i>S</i>	<i>RZ</i>	<i>G</i>	<i>S</i>	<i>RZ</i>	<i>G</i>	<i>S</i>	<i>RZ</i>	
Control	1	-13.8	-10.8	-23.7	-10.8	-3.6	-14.6	-21.7	-22.3	-33.6	-6.3	-6.1	-10.1
	2	-20.0	-15.7	-26.0	-19.4	-14.4	-22.6	-15.9	-9.3	-22.1	-12.1	-11.0	-8.5
	3	-15.6	-11.4	-22.7	-11.6	-10.4	-16.4	-10.2	-9.0	-11.9	-16.4	-3.8	-12.1
	4	-22.9	-22.2	-24.7	-12.2	-10.3	-16.5	-14.8	-7.3	-23.3	-18.0	-24.4	-19.9
	5	-19.6	-13.9	-25.2	-16.3	-8.4	-20.4	-13.5	-6.4	-17.6	-11.9	-5.3	-16.7
	6	-13.4	-9.5	-20.1	-11.9	-7.2	-17.9	-8.5	-2.5	-13.7	-8.2	-7.6	-12.9
	7	-15.7	-9.3	-24.0	-12.8	-6.4	-23.2	-18.1	-13.4	-17.1	-11.5	-10.9	-16.2
	8	-12.7	-8.7	-21.3	-14.1	-9.2	-24.0	-16.8	-12.5	-21.3	-11.3	-7.9	-18.4
	9	-17.9	-15.3	-25.7	-16.0	-9.2	-23.3	-12.3	-11.1	-14.1	-7.3	-3.2	-25.1
	10	-20.9	-17.9	-21.4	-15.6	-11.5	-17.5	-20.1	-15.5	-29.1	-12.1	-8.5	-19.1
EHM	1	-21.0	-16.4	-22.7	-18.7	-15.8	-18.8	-13.0	-14.5	-23.1	-12.0	-14.2	-17.7
	2	-18.3	-16.0	-22.9	-12.7	-10.8	-16.3	-14.6	-13.3	-17.7	-12.5	-18.0	-11.9
	3	-17.2	-11.3	-22.6	-16.8	-14.3	-16.5	-15.1	-25.1	-18.0	-9.8	-7.4	-11.1
	4	-19.4	-18.6	-24.1	-15.5	-11.1	-23.6	-11.4	-11.3	-12.6	-10.7	-15.3	-7.9
	5	-13.4	-12.1	-18.6	-15.7	-11.4	-19.8	-13.2	-16.1	-13.6	-13.8	-8.3	-16.4
	6	-16.3	-11.8	-20.3	-14.8	-10.6	-14.8	-19.7	-10.0	-20.8	-13.0	-7.8	-15.1
	7	-14.0	-5.4	-17.0	-14.3	-7.3	-24.7	-8.0	-19.1	-8.8	-12.8	-8.1	-12.9
	8	-14.8	-12.8	-24.2	-15.9	-14.3	-22.3	-15.6	-18.0	-20.1	-6.3	-5.3	-7.6
	9	-15.3	-9.9	-24.0	-15.7	-11.5	-21.8	-21.0	-25.5	-20.1	-12.5	-5.9	-15.1
	10	-16.3	-12.7	-22.9	-14.1	-7.3	-19.0	-13.4	-8.6	-14.0	-9.8	-3.0	-13.4
	11	-16.4	-13.3	-22.5	-15.7	-11.2	-22.1	-15.4	-12.9	-17.0	-21.1	-17.6	-26.5
	12	-12.9	-11.0	-22.4	-13.8	-12.8	-14.8	-22.8	-7.3	-36.4	-18.8	-12.1	-26.8
Healthy	1	-23.5	-29.5	-21.0				-21.2	-32.0	-19.4			
	2	-30.9	-36.1	-32.4				-21.9	-26.5	-19.4			
	3	-25.5	-25.5	-29.1				-28.4	-29.6	-27.9			
	4	-20.4	-19.9	-21.7				-34.1	-46.4	-29.7			
	5	-23.7	-25.2	-26.1				-35.5	-36.9	-35.9			
	6	-20.9	-29.9	-24.5				-28.2	-22.4	-38.7			

EHM: group transplanted with engineered heart muscle; MRI: magnetic resonance imaging; D-1: 1 day before EHM transplantation; D28: 28 days after EHM transplantation; G: global strain; S: scar strain; RZ: remote zone strain.