

## SUPPLEMENTARY DATA

Glyoxalase 1 enhances bone marrow progenitor cell therapy for wound healing in diabetic mice.

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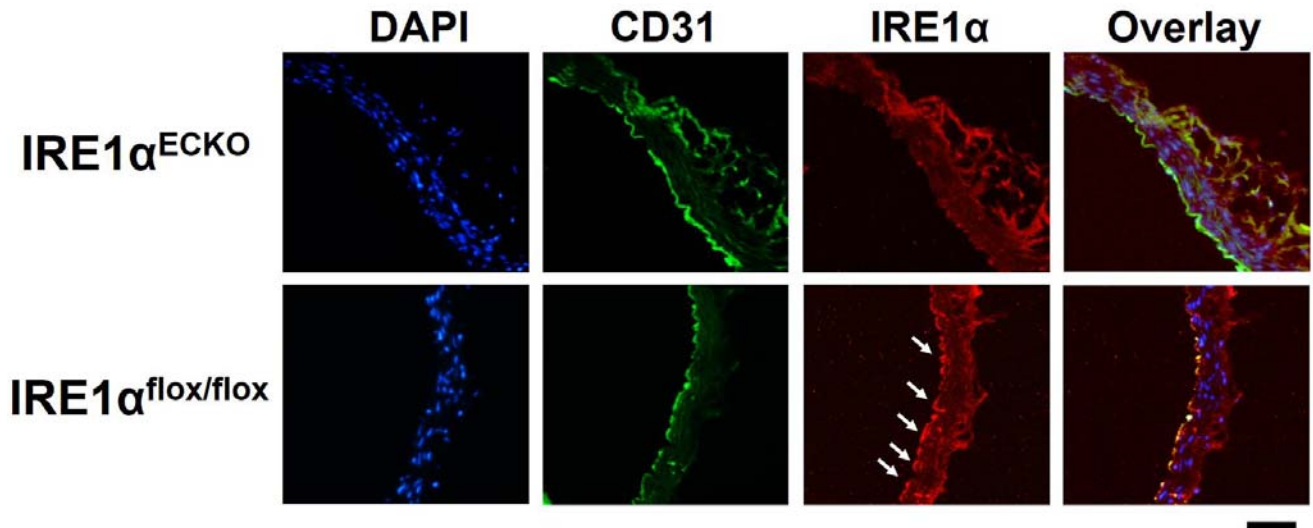
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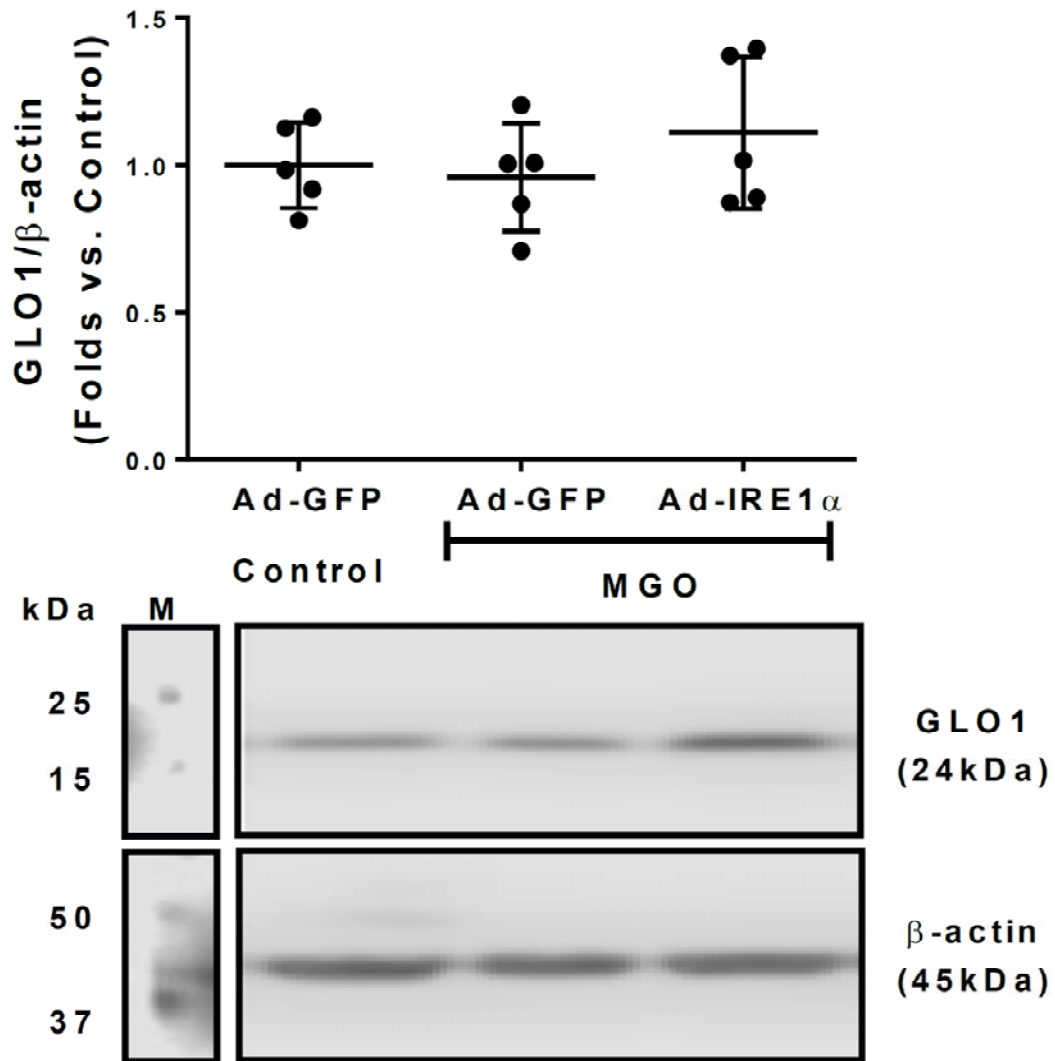
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**Supplementary Figure S1. Immunofluorescent staining of IRE1 $\alpha$  and CD31 of aortas from IRE1<sup>ECKO</sup> and IRE1<sup>flox/flox</sup> mice.** White arrows indicate IRE1 $\alpha$  in endothelium of aorta isolated from IRE1<sup>flox/flox</sup> mice. Bar = 200  $\mu$ m.



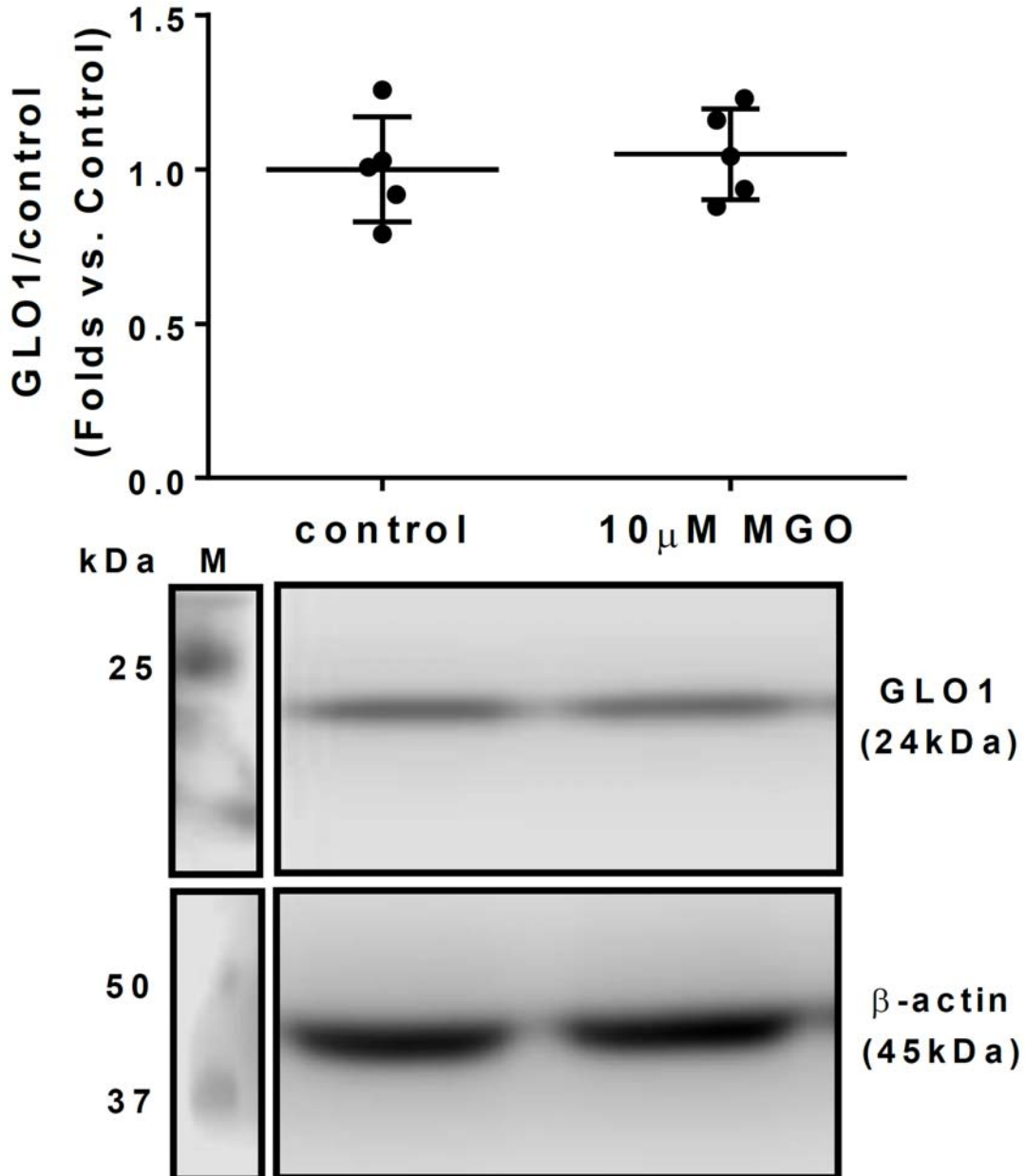
SUPPLEMENTARY DATA

**Supplementary Figure S2. Western blot analysis of GLO1 expression level in Ad-IRE1 $\alpha$  or Ad-GFP infected db/db BMPCs with 24 hours of MGO exposure.** BMPCs from db/+ mice were culture for 7 days then transfected with adenovirus carrying human IRE1 $\alpha$  (Ad-IRE1 $\alpha$ , 100 MOI, 48 hours) using adenovirus carrying egfp (Ad-GFP, 100 MOI, 48 hours) as controls. GLO1 protein level was analyzed by Western blot assay. n = 5 per group.



SUPPLEMENTARY DATA

**Supplementary Figure S3. Glyoxalase 1 (GLO1) expression level in bone marrow-derived progenitor cells (BMPCs) from db/+ mice did not change after MGO exposure.** BMPCs from db/+ mice were culture for 7 days then exposed to 10  $\mu$ M of MGO for 24 hours. GLO1 protein level was analyzed by Western blot assay, n = 5 per group.



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**Supplementary Table S1. Key functional regions and potential MGO binding sites in human IRE1 $\alpha$ .**

Feature Key	Position	Description	Sequence
Binding site	599	ATP binding	FDNRDVAV <b>KR</b>
Active site	688	Proton acceptor	SLNIVHR <b>DLK</b>
Binding site	577-585	Nucleotide binding, ATP required	FCP <b>KDVLGHG</b> <b>AEGTIVYRGM</b>
Mutagenesis	599	K->A: Loss of autophosphorylation & endoribonuclease activity	FDNR <b>D</b> VAV <b>KR</b>
Mutagenesis	907	K->A: Loss of endoribonuclease activity	L <b>R</b> AMR <b>NKK</b> HH
Modified site	724-729	Phosphorylation sites	GH <b>SFSRR</b> SG

**Red** AA: functional site; **highlighted** AA: potential MGO binding position.

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**Supplementary Table S2. Clinical and biochemical characteristics in lean healthy subjects, obese subjects and type 2 diabetic patients.**

Characteristics	Lean healthy (LH)	Type 2 diabetes (T2D)
Age (years)	25 ± 2.70	61.5 ± 3.54
Gender (Male/Female)	3/1	1/1
BMI (kg/cm <sup>2</sup> )	21.20 ± 2.24	24.65 ± 1.54
Fasting glucose (mg/dl)	86.95 ± 7.28	161.85 ± 85.05
OGTT (2h, mg/dl)	92.60 ± 21.06	215 ± 29.62
HbA1c (%) (mmol/mol)	5.4% (36mmol/mol) ± 0.20	7.90% (63mmol/mol) ± 3.11

Abbreviation: BMI - body mass index. OGTT - oral Glucose Tolerance Test. Values are percentages or mean ± SD

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