

## Major Resources Table

In order to allow validation and replication of experiments, all essential research materials listed in the Methods should be included in the Major Resources Table below. Authors are encouraged to use public repositories for protocols, data, code, and other materials and provide persistent identifiers and/or links to repositories when available. Authors may add or delete rows as needed.

### Animals (in vivo studies)

Species	Vendor or Source	Background Strain	Sex	Persistent ID / URL
Mouse	Jackson Laboratories	C57BL/6J	M	Stock #000664
Rat	Charles River	Sprague-Dawley	Both	Stock #400

### Genetically Modified Animals

Description	Species	Vendor or Source	Background Strain	Other Information	Persistent ID / URL
<i>Ucp1</i> <sup>-/-</sup>	Mouse	Jackson Laboratories	C57BL/6J		Stock # 003124
<i>Bmp3b</i> <sup>-/-</sup>	Mouse	Courtesy of Dr. Se-Jin Lee (Johns Hopkins University)	C57BL6J	have been described previously (Zhao R, Lawler AM, Lee S-J. Characterization of GDF-10 Expression Patterns and Null Mice [Internet]. Dev Biol 1999;212(1):68–79.)	NA

### Antibodies

Target antigen	Vendor or Source	Catalog #	Working concentration	Persistent ID / URL
CD31 (PECAM1)	Dianova	DIA-310	1:200	<a href="https://www.dianova.com/en/shop/dia-310-anti-cd31-mssw-from-rat-sz31-unconj-for-mouse-ffpe-tissue/">https://www.dianova.com/en/shop/dia-310-anti-cd31-mssw-from-rat-sz31-unconj-for-mouse-ffpe-tissue/</a>
TH	Millipore	AB152	1:200	<a href="https://www.emdmillipore.com/US/en/product/Anti-Tyrosine-Hydroxylase-Antibody,MM_NF-AB152">https://www.emdmillipore.com/US/en/product/Anti-Tyrosine-Hydroxylase-Antibody,MM_NF-AB152</a>
phospho-Smad2/3	Cell Signaling	#8828	1:1000	<a href="https://www.cellsignal.com/products/primary-antibodies/phospho-smad2-ser465-467-smad3-ser423-425-d27f4-rabbit-mab/8828">https://www.cellsignal.com/products/primary-antibodies/phospho-smad2-ser465-467-smad3-ser423-425-d27f4-rabbit-mab/8828</a>
Smad2/3	Cell Signaling	#5678	1:1000	<a href="https://www.cellsignal.com/products/primary-antibodies/smاد2-3-antibody/5678">https://www.cellsignal.com/products/primary-antibodies/smاد2-3-antibody/5678</a>
phospho-Smad1/5	Cell Signaling	#9516	1:1000	<a href="https://www.cellsignal.com/products/primary-antibodies/phospho-smad1-5-ser463-465-41d10-rabbit-mab/9516">https://www.cellsignal.com/products/primary-antibodies/phospho-smad1-5-ser463-465-41d10-rabbit-mab/9516</a>
Smad1	Cell Signaling	#6944	1:1000	<a href="https://www.cellsignal.com/products/primary-antibodies/smاد1-d59d7-xp-rabbit-mab/6944">https://www.cellsignal.com/products/primary-antibodies/smاد1-d59d7-xp-rabbit-mab/6944</a>
β-actin	Cell Signaling	#3700	1:3000	<a href="https://www.cellsignal.com/products/primary-antibodies/b-actin-8h10d10-mouse-mab/3700">https://www.cellsignal.com/products/primary-antibodies/b-actin-8h10d10-mouse-mab/3700</a>
Gapdh	Cell Signaling	#2118	1:3000	<a href="https://www.cellsignal.com/products/primary-antibodies/gapdh-14c10-rabbit-mab/2118">https://www.cellsignal.com/products/primary-antibodies/gapdh-14c10-rabbit-mab/2118</a>
Ucp1	Novus	#NB100-2828	1:1000	<a href="https://www.novusbio.com/products/ucp1-antibody_nb100-2828">https://www.novusbio.com/products/ucp1-antibody_nb100-2828</a>
Bmp3b	Thermo Fisher	PA5-70041	1:1000	<a href="https://www.thermofisher.com/antibody/product/GDF10-Antibody-Polyclonal/PA5-70041?imageId=137108">https://www.thermofisher.com/antibody/product/GDF10-Antibody-Polyclonal/PA5-70041?imageId=137108</a>
Anti-mouse IgG, HRP-linked Antibody	Cell Signaling	#7076	1:2000	<a href="https://www.cellsignal.com/products/secondary-antibodies/anti-mouse-igg-hrp-linked-antibody/7076">https://www.cellsignal.com/products/secondary-antibodies/anti-mouse-igg-hrp-linked-antibody/7076</a>

Anti-rabbit IgG, HRP-linked Antibody	Cell Signaling	#7074	1:2000	<a href="https://www.cellsignal.com/products/secondary-antibodies/anti-rabbit-igg-hrp-linked-antibody/7074">https://www.cellsignal.com/products/secondary-antibodies/anti-rabbit-igg-hrp-linked-antibody/7074</a>
--------------------------------------	----------------	-------	--------	---

## DNA/cDNA Clones: None

## Cultured Cells

Name	Vendor or Source	Sex (F, M, or unknown)	Persistent ID / URL
Rat Neonatal Cardiomyocytes (RNCM)	Isolated in our laboratory	Both	NA

## Data & Code Availability

Description	Source / Repository	Persistent ID / URL
RNA-seq data	Gene Expression Omnibus database (accession number GSE210613).	<a href="https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE210613">https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE210613</a>

## Other

Description	Source / Repository	Persistent ID / URL
Recombinant Human BMP-3b/GDF-10 Protein	R&D Systems	1543-BP
2,3,5-Triphenyltetrazolium chloride (TTC)	Sigma-Aldrich	T8877
FluoSpheres™ Polystyrene Microspheres, 10 μm, yellow-green fluorescent (505/515)	Invitrogen	F8836
K02288	Cayman Chemical	16678
β-cyclodextrin	Sigma-Aldrich	C4767
Alzet osmotic minipumps	Alza Durect Corp	1002
Isoproterenol	Sigma-Aldrich	I6504
NOVOLIN R- human insulin injection, solution	Novo Nordisk	NDC 0169-1833-11
Dextrose (D-Glucose), Anhydrous	Thermo Fisher	D163
DMEM, high glucose, GlutaMAX™ Supplement, pyruvate	Gibco	10569010
DMEM, no glucose	Gibco	11966025
Pierce™ Primary Cardiomyocyte Isolation Kit	Thermo Scientific	88281
Fetal Bovine Serum	Sigma	F2442
Penicillin-Streptomycin (10,000 U/mL)	Gibco	15140122
L-Glutamine (200 mM)	Gibco	25030081
BMP3b ELISA kit (Mouse)	GBiosciences	#IT5716
Cardiac Troponin T ELISA kit (Mouse)	Life Diagnostic	CTNI-1-HSP
BMP3b ELISA kit (Human)	LifeSpan Biosciences	LS-F26940-1
Pierce™ BCA Protein Assay Kit	Thermo Scientific	23225
Pierce™ Protein-Free Blocking Buffer	Thermo Scientific	37570
Bovine Serum Albumin	Sigma-Aldrich	A7906
Pierce™ ECL Western Blotting Substrate	Thermo Scientific	32106
30% acrylamide and bis-acrylamide solution, 37.5:1	BioRad	1610158
RIPA Buffer (10X)	Cell Signaling	9806S
PhosSTOP™	Roche	4906837001

DOI [to be added]

cOmplete™, Mini, EDTA-free Protease Inhibitor Cocktail	Roche	11836170001
10x Tris/Glycine/SDS	BioRad	1610732
10x Tris Buffered Saline (TBS)	BioRad	1706435
4x Laemmli Sample Buffer	BioRad	1610747
TEMED	BioRad	1610800
Tris base	BioRad	1610719
Glycine	Fisher Scientific	BP381-500
HyBlot CL® Autoradiography Film	Thomas Scientific	1141J52
Immobilon®-P PVDF Membrane	Milipore	IPVH00010
TRIzol™ Reagent	Invitrogen	15596018
RNeasy Plus Mini Kit	Qiagen	74136
Agilent RNA 6000 Nano Kit	Agilent Technologies	5067-1511
TruSeq Stranded mRNA HT Sample Prep Kit	Illumina	20020594
High-Capacity cDNA Reverse Transcription Kit	Applied Biosystems	4368814
Luna® Universal Probe qPCR Master Mix (Taqman)	New England BioLabs	M3004L
Caspase-Glo® 3/7 Assay System	Promega	G8090
TUNEL Label Mix	Roche	11767291910
TUNEL Enzyme	Roche	11767305001

#### List of qRT-PCR/PCR primers

Gene	Chemistry	Persistent ID / URL
Bmp3b	TaqMan	IDT (Mm.PT.58.31156962)
Ucp1	TaqMan	IDT (Mm.PT.58.7088262)
Tbp	TaqMan	IDT (Mm.PT.39a.22214839)

#### ARRIVE GUIDELINES

The ARRIVE guidelines (<https://arriveguidelines.org/>) are a checklist of recommendations to improve the reporting of research involving animals. Key elements of the study design should be included below to better enable readers to scrutinize the research adequately, evaluate its methodological rigor, and reproduce the methods or findings.

#### Study Design: NA

**Sample Size:** Please explain how the sample size was decided Please provide details of any *a priori* sample size calculation, if done.

Assuming a SD of 10% in the MI size, we need 8 surviving mice in each group to show a 15% difference in the MI size between two strains of mice or a reversal in this difference using an intervention with a power of 85% and a type 1 error of 5%. Based on an assumed mortality of 10% after I/R injury, we used 9 mice in each group.

(Difference 15%, SD 10%, Power 85%, type 1 error 5%).

**Inclusion Criteria.** Mice aged 8-10 weeks were included.

**Exclusion Criteria.** There were no *a priori* exclusion criteria. Mice that died before reaching the endpoint of the experiment, that is 24 hours after I/R for the measurement of cardiac injury or 3 hours after I/R in the investigation of the SMAD pathways were excluded from the analysis.

DOI [to be added]

**Randomization.** Mice were randomized to treatments based on body weight prior to intervention, and according to their genotype.

**Blinding.** Each mouse or human sample was given a number, and the relevant characteristics of this sample (genotype of the mouse, procedure, treatment, timing of the sample) were entered in a master file. The investigator analyzing the variables of interest (MI size, area at risk, cardiac troponin, body weight, glucose levels etc..) was only aware of the number and blinded to the characteristics of the sample that was analyzed.