

Supplementary Material

Deletion of the *Lmna* Gene in Fibroblasts Causes Senescence-Associated Dilated Cardiomyopathy by Activating the Double-Stranded DNA Damage Response and Induction of Senescence-Associated Secretory Phenotype

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Online Table 1

List of oligonucleotide primers

A. Genotyping primers

Gene	Forward sequence	Reverse sequence
<i>Lmna</i> Flox	TCGAGGCTCTTCTCAACTCC	CTCTCCTCTGAAGTGCTTGGA
<i>Cre recombinase</i>	GCGGTCTGGCAGTAAAACTATG	GTGAAACAGCATTGCTGTCACTT
Internal control	CTAGGCCACAGAATTGAAAGATCT	GTAGGTGGAAATTCTAGCATCATCC

B. Antibodies

Antibodies	Concentration	Supplier	Catalog number
Anti-mouse IgG HRP linked antibody	1:4000 (IB)	Cell Signaling Technology	7076
Anti-rabbit IgG HRP linked antibody	1:2000 (IB)	Cell Signaling Technology	7074
Goat anti-Mouse IgG, Alexa Fluor 488	1:1000 (IF)	Invitrogen	A11029
Goat anti-Rabbit IgG, Alexa Fluor 594	1:1000 (IF)	Invitrogen	A11005
GAPDH	1:1000 (IB)	Cell Signaling Technology	8245
LMNA/C (E-1)	1:50 (IF)	Santa Cruz	376248
LMNA	1:1000 (IB)	Abcam	26300
PDGFR α	1:200 (IF)	Cell Signaling Technology	3174S
TP53	1:250 (IB)	Santa Cruz	6243
p-P53(S15)	1:1000 (IB)	Cell Signaling Technology	9284
p-P53(S392)	1:1000 (IB)	Cell Signaling	9281

		Technology	
CDKN1A	1:500 (IB)	Pharmingen	556431
PLIN1	1:200 (IF)	Cell Signaling Technology	9349
cGAS (D3080)	1:1000 (IB)	Cell Signaling Technology	31659
GALECTIN3 (LGALS3)	1:1000 (IB)	Abcam	53082
ATM	1:1000 (IB)	Cell Signaling Technology	2873
pH2AFX	1:1000 (IB), 1:200 (IF)	EMD Millipore	05-636
H2AX	1:1000 (IB)	Millipore Sigma	AB10022
CTGF		Santa Cruz	365970
PCM1	1:250	Sigma	<u>HPA023370</u>

C. Oligonucleotide primers used in qPCR reactions

Name	Sequence
<i>Gapdh</i>	Forward: AACTTTGGCATTGTGGAAGG Reverse: GGATGCAGGGATGATGTTCT
<i>Tgfb1</i>	Forward: TGGAGCAACATGTGGAAGCTC Reverse: GTCAGCAGCCGGTTACCA
<i>Tgfb2</i>	Forward: AGGAGTGGCTTCACCACAAAGACA Reverse: ATTAGACGGCACGAAGGTACAGCA
<i>Timp1</i>	Forward: CATGGAAAGCCTCTGTGGATA Reverse: CTCAGAGTACGCCAGGGAAC
<i>Dgat1</i>	Forward: GAGGTGCGAGACGCGG Reverse: ATGGCACCTCAGATCCCAGTA
<i>Bnip3</i>	Forward: TCCTGGGTAGAACTGCACTTC Reverse: GCTGGGCATCCAACAGTATTT
<i>Gadd45g</i>	Forward: GGGAAAGCACTGCACGAACT Reverse: AGCACGCAAAGGTCACATTG
<i>Gadd45b</i>	Forward: CAACGCGGTTTCAGAAGATGC Reverse: GGTCCACATTCATCAGTTTGGC
<i>Bcl2l1l</i>	Forward: CCCGGAGATACGGATTGCAC Reverse: GCCTCGCGGTAATCATTTC
<i>Bcl2</i>	Forward: CACCCCTGGTGGACAACATC Reverse: GTTCCACAAAGGCATCCCAGC
<i>Cxcl2</i>	Forward: TCCAGAGCTTGAGTGTGACG Reverse: GCAAACCTTTTGGACCGCCCT
<i>Crlf1</i>	Forward: AGCCCACACAGCTGTAATCA Reverse: GGTCCAGTAGAGCCCCTCA
<i>Thbs4</i>	Forward: GACCCTGCCAGATGGTTAC Reverse: TCACATCTGAAACCCGGAGC
<i>Serpina3g</i>	Forward: AATTCAGCATGCAGTGGAGAGA Reverse: GGGAGACACCAGCCATTATTCT
<i>Pcolce</i>	Forward: GGGCACTGAGCACCAGTTTT

	Reverse: GCTGATGCCTGGTGGGTAAT
<i>Col5a2</i>	Forward: GTACCACGGGCAAAGAGGAA Reverse: CTTTTCCTGGTGTACCCGCT
<i>Postn</i>	Forward: AGAGAAATCCCTCACGACA Reverse: GTTGGTGCAAACAAGGTCCA
<i>Lgals3</i>	Forward: TAATCAGGTGAGCGGCACAG Reverse: GCTAAGGCATCGTTAAGCGAAA
<i>Bax</i>	Forward: ACAGGGGCCTTTTTGCTACA Reverse: CACTCGCTCAGCTTCTTGGT
<i>Bbc3(Puma)</i>	Forward: GAGACAAGAAGAGCAGCATCG Reverse: TAGTTGGGCTCCATTCTGG

D. TaqMan probes

Gene	TaqMan Assay ID
<i>Gapdh</i>	Mm99999915_g1
<i>Coll1a1</i>	Mm00801666_g1
<i>Col3a1</i>	<u>Mm00802300_m1</u>
<i>Adipoq</i>	Mm00456425_m1
<i>ApoE</i>	<u>Mm01307193_g1</u>
<i>Pparg</i>	<u>Mm00440940_m1</u>
<i>Cebpa</i>	<u>Mm00514283_s1</u>
<i>Ctgf</i>	Mm01192932-g1
<i>Dgat2</i>	Mm00499536 m1

Online Table 2
Comprehensive Metabolic Panel

Assay	Units	Wild Type	<i>Pdgfra-Cre:Lnna^{W/F}</i>	<i>Pdgfra-Cre:Lnna^{F/F}</i>	p
N		5	5	5	
CHOL	Mg/dL	93.5±13.5	72±10	70.3±6.5	0.06453
TRIG	Mg/dL	214±47.6	139.7±0.5	101.5±0.5	0.10896
ALT	U/L	32.4±5.7	20.4±4.1	61±27	0.06318
AST	U/L	59.6±20.8	61.2±30.2	151.6±95.9	0.07704
ALP	U/L	217.6±27.2	223.2±58.7	231.8±48.9	0.61224
GLU	Mg/dL	212.8±10.8	221.2±22.2	135.6±35	0.00338
PHOS	Mg/dL	9.7±0.6	11.15±0.2	6.2±4.3	0.28307
Ca	Mg/dL	10.9±0.1	10.8±0.4	10.8±0.2	0.32224
TP	g/dL	4.7±0.1	4.5±0.05	4.5±0.2	0.15975
ALB	g/dL	2.9±0.2	2.8±0.1	2.9±0.1	0.74912
GLOB	g/dL	1.7±0.1	1.6±0	1.6±0.05	0.40097
A/G	—	1.8±0.2	1.8±0	1.9±0	0.64559
BUN	Mg/dL	27±0.7	23±3.7	31.6±7.3	0.24850
CREAT	Mg/dL	0.2±0	0.2±0	0.1±0	—
B/C	—	135±3.5	115±1.5	—	—
TBIL	Mg/dL	0.16±0.03	0.14±0.02	0.24±0.08	0.08348
Na	mEq/L	150±0.8	150.4±1.5	153.8±0.9	0.04478
K	mEq/L	8.08±0.2	9.0±0.9	8.2±0.4	0.53160

Na/K	—	18.574±0.4	16.7±1.6	18.7±1.1	0.78760
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Abbreviations: *Pdgfra-Cre:Lnna*^{W/F}: Mice with heterozygous deletion of the *Lnna* gene; *Pdgfra-Cre:Lnna*^{F/F}: mice with homozygous deletion of the *Lnna* gene; CHOL: cholesterol; TRIG: Triglyceride, ALT: Alanine aminotransferase; AST: Aspartate aminotransferase; ALP: Alkaline phosphatase; GLU: Glucose; Phos: Phosphorous; Ca: Calcium; TP: Total protein; ALB: Albumin; A/G: Albumin/Globulin ratio; GLOB: Globulin; BUN: Blood urea nitrogen; CREAT: Creatinine; TBIL: total bilirubin; Na: Sodium; K: Potassium; Na/K: Sodium/Potassium ratio.