

**Supplementary Table S1**

Oligos	Sequence	Reference (if any)
siRNA scramble (control)	cguacgcggaauacuucgatt	Dardenne et al.
siRNA against macroH2A1.1_1	cgacaaacacugacuucuatt,	Dardenne et al.
siRNA against macroH2A1.1_2	ccgacaaaacacugacuucutt	Dardenne et al.
siRNA against macroH2A1.2_1	gcuuugagguggaggccautt	Dardenne et al.
siRNA against macroH2A1.2_2	ugacauugaccuuaaagautt	Dardenne et al.
siRNA against PARP1_1	agctgaagaaagcgtgttctt	
siRNA against PARP1_2	aggcgtggcaggcaaaggctt	
siRNA against NMNAT3_1	SASI_Mm01_00194519 (start:971)	
siRNA against NMNAT3_2	SASI_Mm01_00194520 (start:443)	
qPCR Primer for mouse macroH2A1 forward	gacggtgaaaaactgcttgg	
qPCR Primer for mouse macroH2A1 reverse	ggaggaggacatcgtggag	
qPCR Primer for mouse macroH2A2 forward	gctggaagagaccatcaaaaa	
qPCR Primer for mouse macroH2A2 reverse	cgaagtgagccgagatgg	
qPCR Primer for mouse macroH2A1 Exon 5 forward	cctacagacggcttactgtc	Dardenne et al.
qPCR Primer for mouse macroH2A1.2 Exon 6 reverse	ggtcaatgtcagcattgtagg	Dardenne et al.
qPCR Primer for mouse macroH2A1.1 Exon 7 reverse	gtgtagaagtcagtgtttgtcg	Dardenne et al.
qPCR Primer for human macroH2A1 Exon 9 reverse	gagttccaggacagctccac	Dardenne et al.
qPCR Primer for human macroH2A1.2 Exon 6/7 forward	tccttgccagaagctgaac	Dardenne et al.
qPCR Primer for human macroH2A1.1 Exon 8 forward	ttcaccgacaaacactgac	Dardenne et al.
qPCR Primer for human macroH2A1 forward	cctggctgatgataagaagctg	
qPCR Primer for human macroH2A1 reverse	gacacgaagtaactggagatgg	
qPCR Primer for human macroH2A2 forward	catggcggcagtcattgag	
qPCR Primer for human macroH2A2 reverse	attgccggccaattctagaa	
qPCR Primer for mouse Myog forward	ggtgtgtaagaggaagtctgtg	
qPCR Primer for mouse Myog reverse	taggcgctcaatgtactggat	
qPCR Primer for human MYOG forward	cagctccctcaaccaggag	
qPCR Primer for human MYOG reverse	cactgccccactctggac	
qPCR Primer for mouse Ckm forward	accacagacaagcataagaccga	
qPCR Primer for mouse Ckm reverse	aggcagagtgtaaccttgatgct	
qPCR Primer for human CKM forward	ctgacaagcacaagactgacc	
qPCR Primer for human CKM reverse	ctgctgagcacgtagttaggg	
qPCR Primer for mouse Rpl7 forward	gaagctcatctatgagaaggc	
qPCR Primer for mouse Rpl7 reverse	aagacgaaggagctgcagaac	
qPCR Primer for mouse Gapdh forward	tgcaccaccaactgcttag	
qPCR Primer for mouse Gapdh reverse	gatgcagggatgatgttc	
qPCR Primer for human/mouse RPL0 forward	ttcattgtgggagcagac	
qPCR Primer for human/mouse RPL0 reverse	cagcagtttctccagac	
qPCR Primer for mouse Mstn forward	cgctaccacggaacaatc	
qPCR Primer for mouse Mstn reverse	aaagcaacatttgggcttg	
qPCR Primer for mouse Tmem171 forward	aaaccaccttctattccag	
qPCR Primer for mouse Tmem171 reverse	atgaaccctgccagaaatg	
qPCR Primer for mouse Itga11 forward	gggaaacctgtggctgac	

qPCR Primer for mouse Itga11 reverse	atgaaggggctgtggaac	
qPCR Primer for mouse Chdr1 forward	tacagagcgtccaggaaaag	
qPCR Primer for mouse Chdr1 reverse	ttgttaggctcctctgcatc	
qPCR Primer for mouse Coxvb forward	agcagcacagaagggactg	
qPCR Primer for mouse Coxvb reverse	tggacgggactagattaggg	
qPCR Primer for mouse Cytc forward	caaatctccacggctgttc	
qPCR Primer for mouse Cytc reverse	tccatcagggtatcctctcc	
qPCR Primer for mouse Cpt1b forward	ttgtacaaccctgacgatg	
qPCR Primer for mouse Cpt1b reverse	tgcaggagataagggtgaaag	
qPCR Primer for mouse Acadm forward	atttggaagccgacacc	
qPCR Primer for mouse Acadm reverse	ttccttaggcactctgacg	
qPCR Primer for mouse Cd36 forward	gcaaagaacagcagcaaaatc	
qPCR Primer for mouse Cd36 reverse	cggggctctgagttatatttc	
qPCR Primer for mouse Ucp2 forward	agttctacaccaagggtcag	
qPCR Primer for mouse Ucp2 reverse	aagcggacctttaccacatc	
qPCR Primer for mouse Cs forward	ggagccaagaactcatcctg	
qPCR Primer for mouse Cs reverse	tctggcctgctccttaggta	
qPCR Primer for mouse Fabp3 forward	gacagcagatgaccggaag	
qPCR Primer for mouse Fabp3 reverse	gtgtctcctgcccgttc	
qPCR Primer for mouse Sdha forward	ctgatggaaaatggggagtg	
qPCR Primer for mouse Sdha reverse	tgaagtaggttcgcccgtag	
qPCR Primer for mouse Ndufa9 forward	aaggaagctgggggtgagag	
qPCR Primer for mouse Ndufa9 reverse	tggcttcaggaaacacacttc	
qPCR Primer for mouse Atp5a1 forward	ccctcggaatgctattgatg	
qPCR Primer for mouse Atp5a1 reverse	taattccaggggcttccagg	
qPCR Primer for mouse Cox4i1 forward	gagcctgattggcaagagag	
qPCR Primer for mouse Cox4i1 reverse	atcagcgtaagtggggaaag	
qPCR Primer for mouse Uqcrc2 forward	gttcgccgttggaagtag	
qPCR Primer for mouse Uqcrc2 reverse	agccaaggcattctgtagg	
qPCR Primer for mouse Slc2a1 forward	tgagttcggctataaactg	
qPCR Primer for mouse Slc2a1 reverse	gagtggttgatgggatg	
qPCR Primer for mouse Slc2a4 forward	gcaccctcactacgctctg	
qPCR Primer for mouse Slc2a4 reverse	gccagcatagcccttttc	
qPCR Primer for mouse Hk2 forward	ggcggatcaaagagaacaag	
qPCR Primer for mouse Hk2 reverse	agcctcctcactgccttatg	
qPCR Primer for mouse Pdhe1a forward	ggttgtgctaaagggaaagg	
qPCR Primer for mouse Pdhe1a reverse	caccatcgccgtataatgtc	
qPCR Primer for mouse Pdk4 forward	aaagatgctctgcgaccag	
qPCR Primer for mouse Pdk4 reverse	cacaatgtggattggttg	
qPCR Primer for mouse Igf1 forward	tggtgatgctcttcagttc	
qPCR Primer for mouse Igf1 reverse	cacaatgcctgtctgaggtg	
qPCR Primer for mouse Nampt forward	ccgccacagatctgttctt	Canto et al.
qPCR Primer for mouse Nampt reverse	agtggccacaaattccagaga	Canto et al.
qPCR Primer for mouse Nmnat-1 forward	aggagtgggtggagactgtg	Canto et al.
qPCR Primer for mouse Nmnat-1 reverse	cagtgacaggtgagctttgtg	Canto et al.
qPCR Primer for mouse Nmnat-2 forward	aaggtgggagaaagcctcag	Canto et al.
qPCR Primer for mouse Nmnat-2 reverse	ctctcataccgcatcactg	Canto et al.
qPCR Primer for mouse Nmnat-3 forward	cagatcctcagcccagatg	
qPCR Primer for mouse Nmnat-3 reverse	gaaggtctgaggacatcagc	
qPCR Primer for mouse Parp-1 forward	cctgaacaacgcagacagc	
qPCR Primer for mouse Parp-1 reverse	cgttgtcgtggttagcatga	
qPCR Primer for mouse Parp-2 forward	ggaaggcgagtgctaaatgaa	
qPCR Primer for mouse Parp-2 reverse	ggaaggcgagtgctaaatgaa	

qPCR Primer for genomic mouse Ndufv1 forward	cttccccactggcctcaag	
qPCR Primer for genomic mouse Ndufv1 reverse	ccaaaaccagtgatccagc	
qPCR Primer for mitochondrial mouse Nd2 forward	agggatcccactgcacatag	
qPCR Primer for mitochondrial mouse Nd2 reverse	ctcctcatgcccctatgaaa	
qPCR Primer for human HPRT1 forward	tggacaggactgaacgtctg	
qPCR Primer for human HPRT1 reverse	ccagcaggtcagcaaagaatt	
RFLP Primers for human MH2A1 Exon 6 forward	gcttcacagtcctcctccacc	
RFLP Primers for human MH2A1 Exon 9 reverse	gagttccaggacagctccac	
RFLP Primers for mouse Mh2a1 Exon 5 forward	cctacagacggcttactgtc	
RFLP Primers for mouse Mh2a1 Exon 8 reverse	cgcccttcttccagtggtg	
Mutagenesis Primers for mouse mH2A1.1 silent_mut_887/890_forward	gtgatgctgtcgttcacccgaccaataactga cttctacaccggtgg	
Mutagenesis Primers for mouse mH2A1.1 silent_mut_887/890_reverse	ccaccggtgtagaagttagtattggtcggg tgaacgacagcatcac	
Mutagenesis Primers for mouse mH2A1.1 silent_mut_893/896_forward	ctgtcgttcacccgaccaatacggatttcta caccggtggtgaagt	
Mutagenesis Primers for mouse mH2A1.1 silent_mut_893/896_reverse	acttcaccaccggtgtagaaatccgtattg gtcgggtgaacgacag	
Mutagenesis Primers for mouse mH2A1.1 silent_GGT667GAG_forward	ccgaccaatacggatttctacaccggtgag gaagtaggaaacacactggagaag	
Mutagenesis Primers for mouse mH2A1.1 silent_GGT667GAG_reverse	cttctccagtgtgttctactcctcaccggt gtagaaatccgtattggtcgg	
Cloning Primers for mouse mH2A1.1_aa1_EcoRI_forward	gcgaattccatgctcgagccgcgcgggga agaag	
Cloning Primers for mouse mH2A1.1_STOP_XhoI_reverse	ggctcgag tcagcctagtggcgtccagcttgg	

### Supplemental References

1. Dardenne, E. *et al.* Splicing switch of an epigenetic regulator by RNA helicases promotes tumor-cell invasiveness. *Nature Structural & Molecular Biology* **19**, 1139–1146 (2012).
2. Cantó, C. *et al.* AMPK regulates energy expenditure by modulating NAD<sup>+</sup> metabolism and SIRT1 activity. *Nature* **458**, 1056–1060 (2009).