

OMTN, Volume 17

Supplemental Information

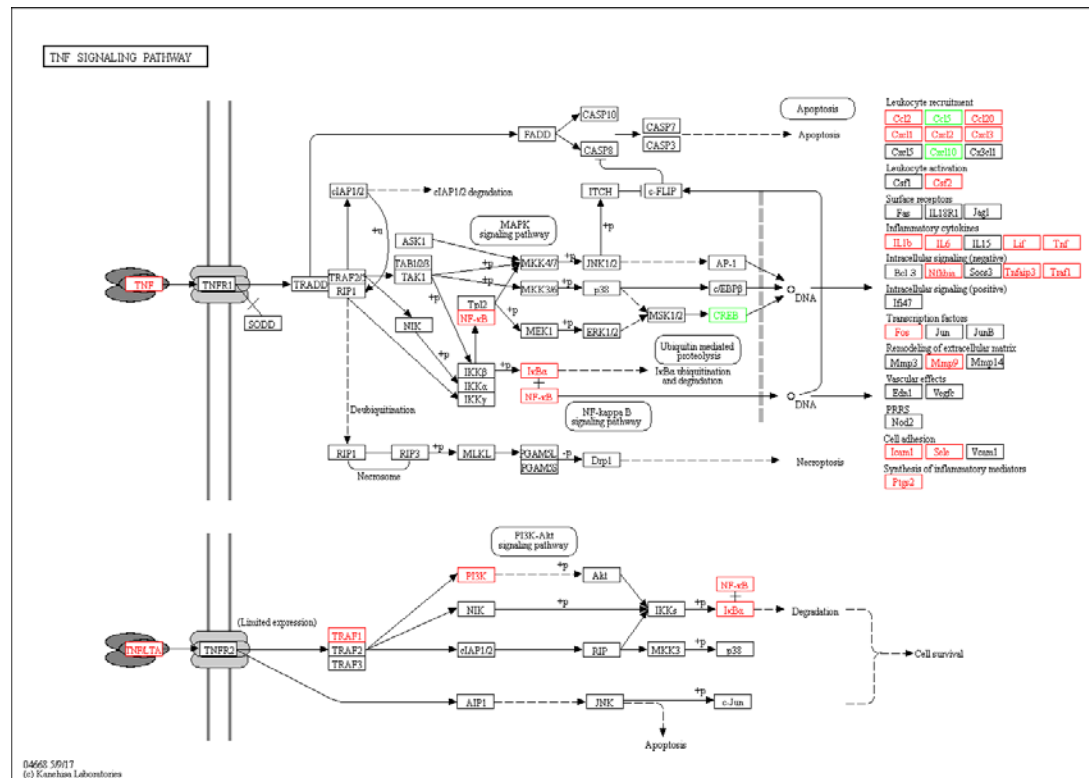
The Different Roles of miRNA-92a-2-5p

and let-7b-5p in Mitochondrial

Translation in db/db Mice

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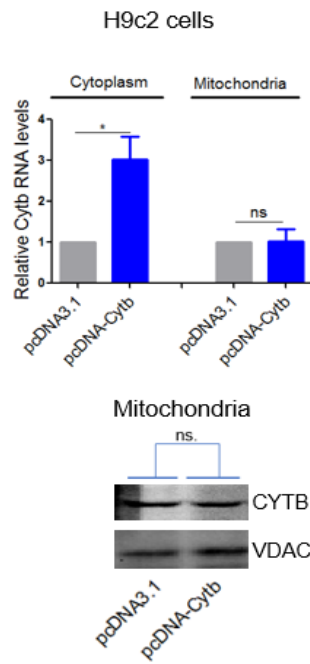
Supplemental Figure 1.



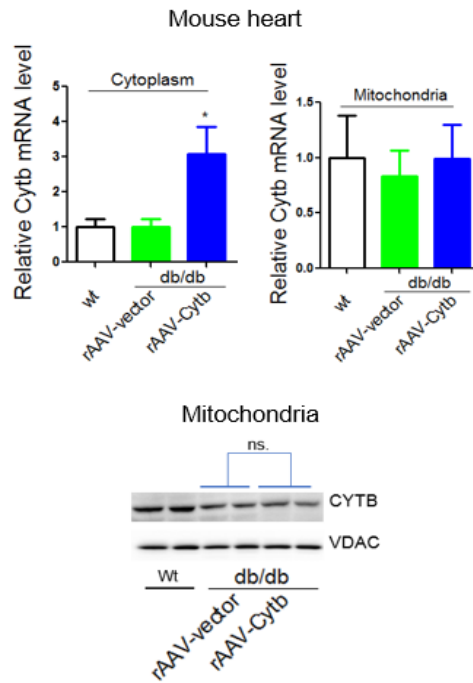
TNF pathway effected by si-Cy5b: TNF pathway-related genes in si-Cy5b treated human cardiomyocytes. Red, upregulated genes; Green, downregulated genes.

Supplemental Figure 2.

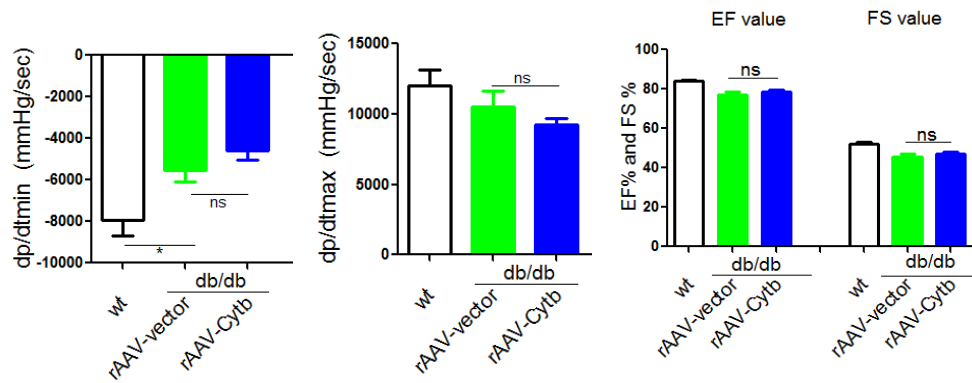
A



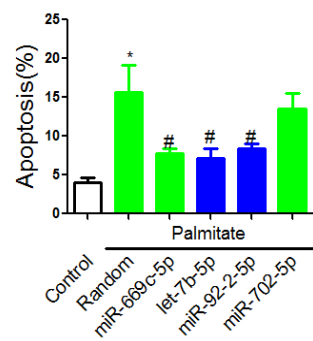
B



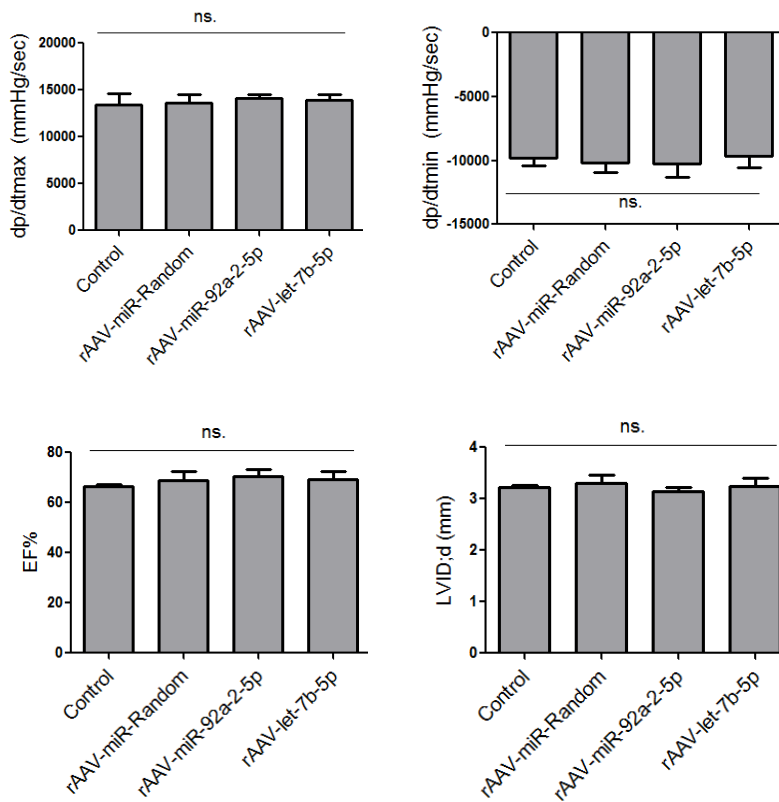
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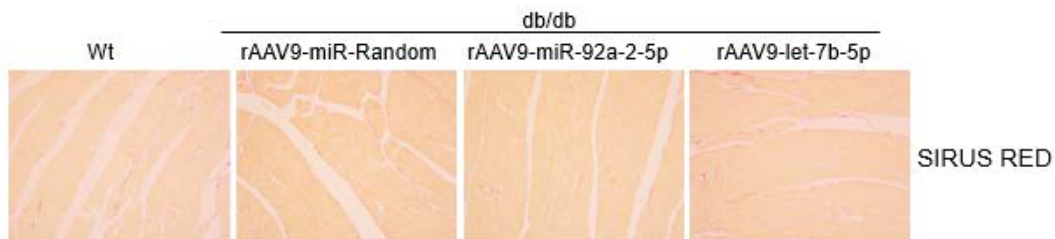
D



E



F

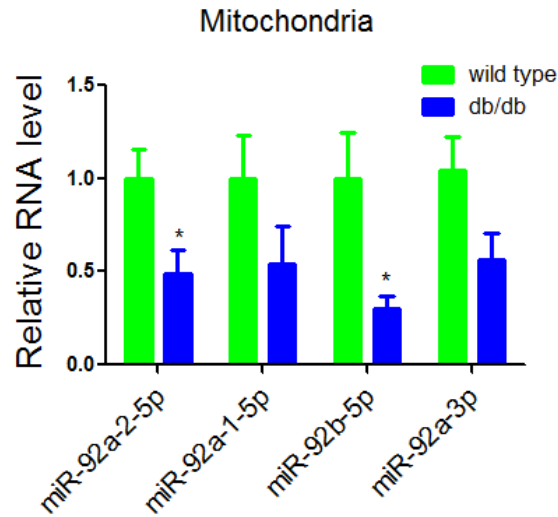


Cytb overexpression was not able to translocate into mitochondria and influence cardiac function: (A-B) Exogenous Cytb were not able to translocate into mitochondria in vitro and in vivo. $n=3$, $*p<0.05$ vs. control, (C) Exogenous Cytb overexpression had no effects on cardiac function. $n=5$, (D) MiR-92a-2-5p and let-7b-5p decreased apoptosis in palmitate treated H9c2 cells. $n=3$, $*p<0.05$ vs control, $\#p<0.05$ vs. Random-Palmitate, (E) MiR-92a-2-5p and let-7b-5p had no effect on cardiac function in normal wt mice. $n=5$, (F) Representative images of fibrosis in heart sections of db/db

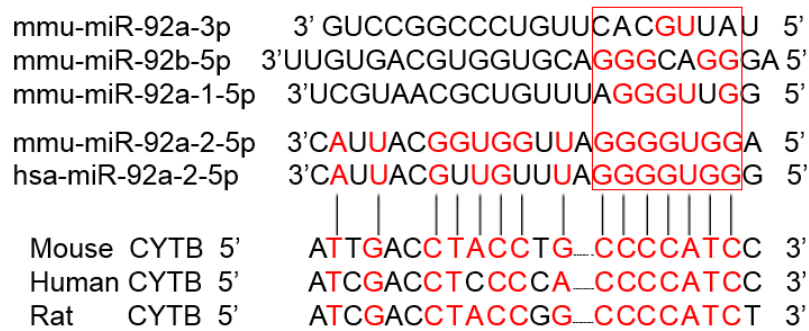
mice compared to wild type controls. n=6

Supplemental Figure 3.

A



B



miR-92a family in db/db heart: (A) Levels of miR-92 family in mitochondria of db/db mice heart. n=3, *p<0.05 vs. wild type. (B) Alignment of miR-92 family with Cytb gene.

Supplemental Table 1. Profile data of dysregulated miRNAs in total lysis of db/db mice heart.

miRNA name	Fold change (db/db vs control)	P value
mmu-miR-3100-3p	3.379849	0.002298
mmu-miR-483-3p	2.88984	0.028147
mmu-miR-484	2.66609	0.003438
mmu-miR-1306-5p	2.320597	0.004208
mmu-miR-5132-3p	2.209863	0.013166
mmu-miR-532-3p	2.189045	0.010657
mmu-miR-1188-3p	2.111686	0.010958
mmu-miR-877-3p	2.074965	0.029558
mmu-miR-3092-3p	2.074283	0.043518
mmu-miR-1894-5p	1.953177	0.047441
mmu-miR-1249-3p	1.762249	0.0091
mmu-miR-129-1-3p	1.74805	0.003375
mmu-miR-291b-5p	1.692632	0.033872
mmu-miR-1952	1.636339	0.017196
mmu-miR-129-2-3p	1.631197	0.02885
mmu-miR-3473c	1.595201	0.02933
mmu-miR-1247-5p	1.483798	0.037113
mmu-miR-1843b-3p	1.469158	0.009484
mmu-miR-5627-3p	1.455016	0.042572
mmu-miR-671-3p	1.37186	0.037427
mmu-miR-1905	1.34211	0.029669
mmu-miR-675-3p	1.275374	0.046373
mmu-miR-133b-5p	1.223183	0.024403
mmu-let-7e-3p	1.221956	0.026879
mmu-miR-451b	0.812181	0.008828
mmu-miR-1198-5p	0.803181	0.008451
mmu-miR-5113	0.797455	0.014974
mmu-miR-1306-3p	0.797017	0.011831
mmu-miR-1930-3p	0.771288	0.032633
mmu-miR-294-3p	0.771169	0.03553
mmu-miR-667-5p	0.769545	0.012857
mmu-miR-466b-3p	0.734125	0.048221
mmu-miR-493-3p	0.731805	0.037204
mmu-let-7i-5p	0.715497	0.022092
mmu-let-7b-5p	0.691732	0.049466
mmu-let-7k	0.674384	0.021577
mmu-miR-672-5p	0.66891	0.031271
mmu-miR-6348	0.660047	0.032634
mmu-miR-466m-5p	0.644924	0.016047
mmu-miR-669m-5p	0.633469	0.026725

mmu-miR-6409	0.630726	0.012737
mmu-miR-466h-5p	0.629384	0.049238
mmu-miR-468-3p	0.592079	0.049524
mmu-miR-669n	0.584645	0.010694
mmu-miR-669c-5p	0.580205	0.019757
mmu-miR-574-5p	0.574544	0.00439
mmu-miR-466i-5p	0.574101	0.007912
mmu-miR-3082-5p	0.543192	0.012309

Supplemental Table 2. Profile data of dysregulated miRNAs in mitochondria of db/db mice heart.

miRNA name	Fold change (db/db vs control)	P value
mmu-miR-1896	0.369378	0.017813
mmu-miR-1934-3p	0.436145	0.009862
mmu-miR-6368	0.501715	0.013362
mmu-miR-365-1-5p	0.539838	0.039712
mmu-miR-5110	0.62789	0.005169
mmu-miR-702-5p	0.650111	0.033205
mmu-miR-5622-3p	0.65223	0.041605
mmu-miR-5128	0.697197	0.004049
mmu-miR-320-3p	0.699476	0.031386
mmu-miR-92a-2-5p	0.713042	0.003418
mmu-miR-6244	0.715978	0.023872
mmu-miR-92b-5p	0.719351	0.029506
mmu-miR-1931	0.742462	0.046414
mmu-miR-181d-5p	0.748628	0.03631

Supplemental Table 3. List of Antibodies.

Antibody	Company	Catalog number
OxPhos Cocktail (NDUFA8)	AbCam	ab110413
OxPhos Cocktail (SDHB)	AbCam	ab110413
OxPhos Cocktail (UQCRC2)	AbCam	ab110413
ND1	ABclonal	A5250
CYTB	proteintech	55090-1-AP
COI	BOSTER	BA4150
ATP6	ABclonal	A8193
IRS1	Cell Signaling Technology	#2382
Akt1/2/3	Santa Cruz Biotechnology	sc-8312
IGF1	ABclonal	A0303

Supplemental Table 4. siRNAs (smart silencer) sequences.

gene name	Smart silencer sequences
Si-r-ND1	CACTCCTAATCCCAATCTT CCACAACCTTTCCTATGAAT GCCGAGTACACCAATATTA CCTAACACTCCTAATCCCAA TCCTAGCAGGAATTCCACCC CGCAGGACCATTGCCCCTAT
Si-r-CYTB	CACGTCTGATACCATAACA CCAGTAGAACACCCATTTA CCCATTCCATCCATATTAT CTCCATGTGGGACGAGGACT ACCATTCTGCATACTTCAA ACCCTAACACGCTTCTTCGC
Si-r-COI	GCATTCCCACGAATAAATA CAGGGATCGTACTATCTAA GAAGAACCTTCCTATGTAA TGGAGGTGGAGACCCAATCC CTAACAGGGATCGTACTATC TAGCAGGGATACCTCGTCGT
Si-r-ATP6	CCGACTACACTCATTTCOA CCTATGTATTCACCCTTCT CTCCCTAATTCCCATACTA TCCCATCATCAGAACGCCTA TCACCCTTCTAGTAAGCCTG AACCTAAGCATAGCCATCCC
Si-h-CYTB	GCGCCTCAATATTCTTTAT CCGTGAGGCCAAATATCAT GCAGACCTCCTCATTCTAA CCCTATTACTATCCATCCTC CTTCACAACAATCCTAATCC AAAATCACCTTCCACCCTTA
Si-r/m-GW182	CCCACTGATTACATTCCAT GGACCAAATAACACTACTA GGAACAAACTGCCTAGCAA GATCAGCACACATTACTCCA GAGACCCTCCAAAGTGTAAT CAAATCGCCTAACGGCTCTA
Si-r-IRS1	GAGAAGAAGTGGCGGCACA

r, rat; h, human; m, mouse

Supplemental Table 5. Primers of qRT-PCR.

Gene name	Forward (5'-3')	Reverse (5'-3')
m-ND1-134bp	TCCGAGCATCTTATCCACGC	GTATGGTGGTACTCCCGCTG
m-ND2-299bp	TCCTCCTGGCCATCGTACTC	TCCTCCTCATGCCCTATGAA
m-ND3-81bp	TGCATTCTGACTCCCCCAAAT	GCAGAGCTTGTAGGGTTCGAA
m-ND4-201bp	AGCTCAATCTGCTTACGCCA	GCTGTGGATCCGTTTCGTAGT
m-ND4L-166bp	AACCTCACCATAGCCTTCTCA	TGATGGGGATTGGTATGGAGC
m-ND5-85bp	ACCCAATCAAACGCCTAGCA	AGGACTGGAATGCTGGTTGG
m-ND6-79bp	GAAGGAGGGATTGGGGTAGC	CCGCAAACAAGATCACCCAG
m-CYTB-160bp	ACGCAAACGGAGCCTCAATA	CCTCATGGAAGGACGTAGCC
m-CO1-74bp	GCTAGCCGCAGGCATTACTA	CTCCTCCAGCGGGATCAAAG
m-CO2-96bp	CCTCCACTCATGAGCAGTCC	AACCCTGGTCGGTTTGATGTT
m-CO3-97bp	GGCCACCACACTCCTATTGT	ACGCTCAGAAGAATCCTGCAA
m-ATP6-108bp	GCATTAGCAGTCCGGCTTAC	GGTAGCTGTTGGTGGGCTAAT
m-ATP8-110bp	TGCCACAACACTAGATACATCAACA	AGGTGCCAGTGGGAATGTTT
m12S rRNA-132bp	CCGCTCTACCTCACCATCTC	CCCATTTTCATTGGCTACACC
r-IRS1-167bp	GAAAGCACTGTGACACCGGA	TGGAACACGGTTTCAGAGCA
r-AKT1-125bp	AGTGTGTGGACAGTGAACGG	GGCTTCTGGACTCGGCAAT
r-IGF1-83bp	GCCTCCCGAGGAACAGAAAA	TGGCAGGTGTTCCGATGTTT
m-GAPDH-123bp	AGGTCGGTGTGAACGGATTTG	TGTAGACCATGTAGTTGAGGTCA
r-GAPDH-252bp	ACAGCAACAGGGTGGTGGAC	TTTGAGGGTGCAGCGAACTT

m, mouse; r, rat