MiR-199a-5p regulates sirtuin1 and PI3K in the rat hippocampus with intrauterine growth restriction

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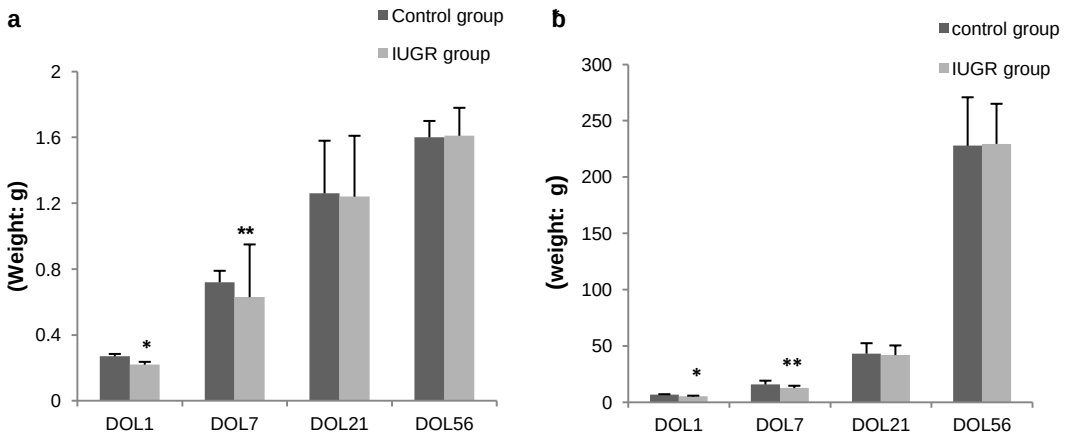
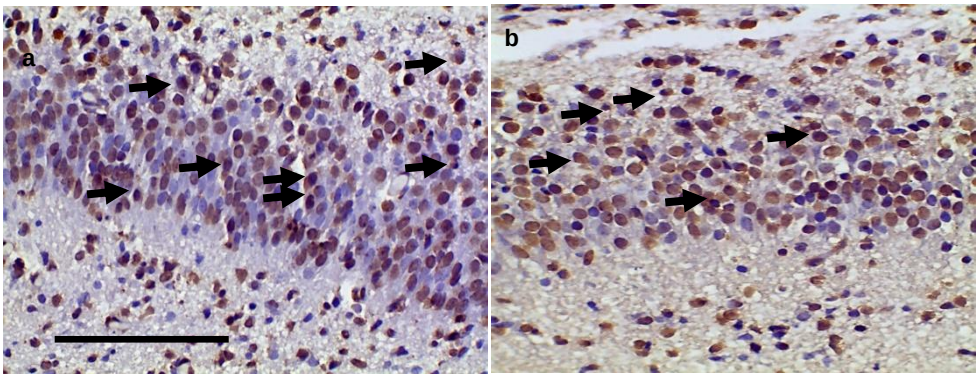
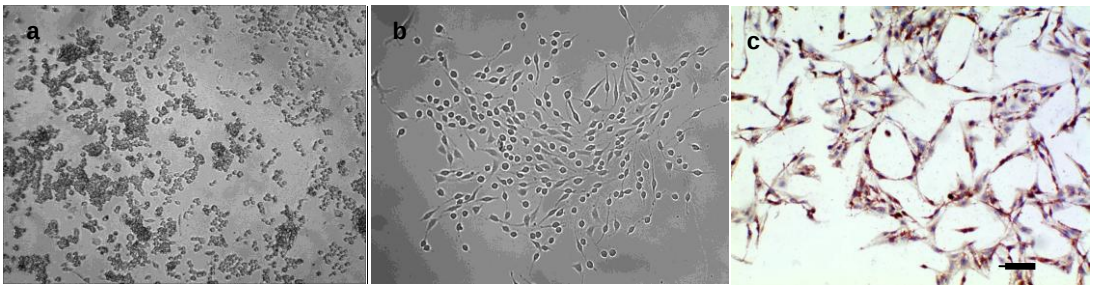


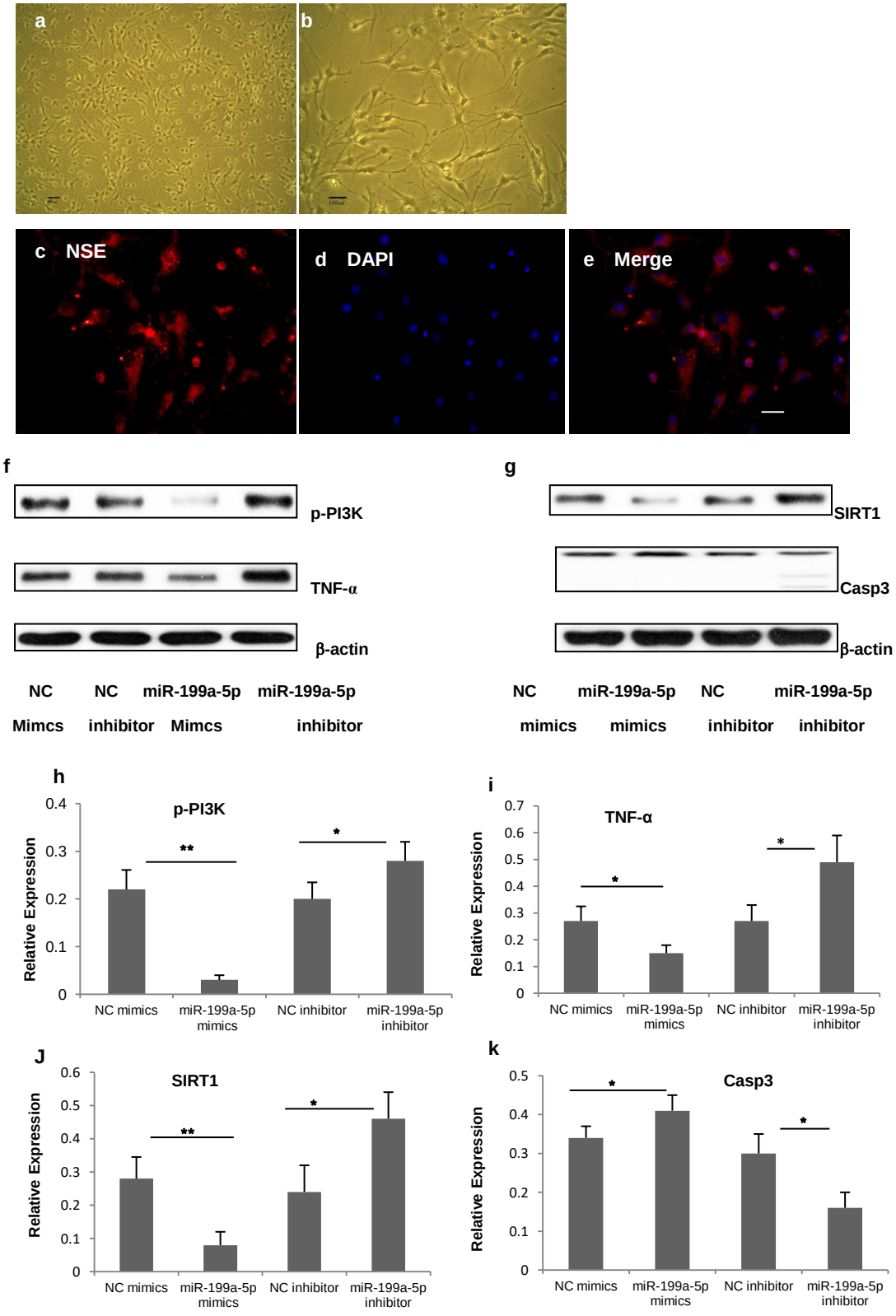
1. **Fig. S1. Brain weights and Body weight at different times.** (**a**) The weight of brain between the control and IUGR groups at different times after birth. (**b**) The body weight between the control and IUGR groups at different times after birth. The values are expressed as the mean ±SD. **P*<0.05, ***P*<0.01.



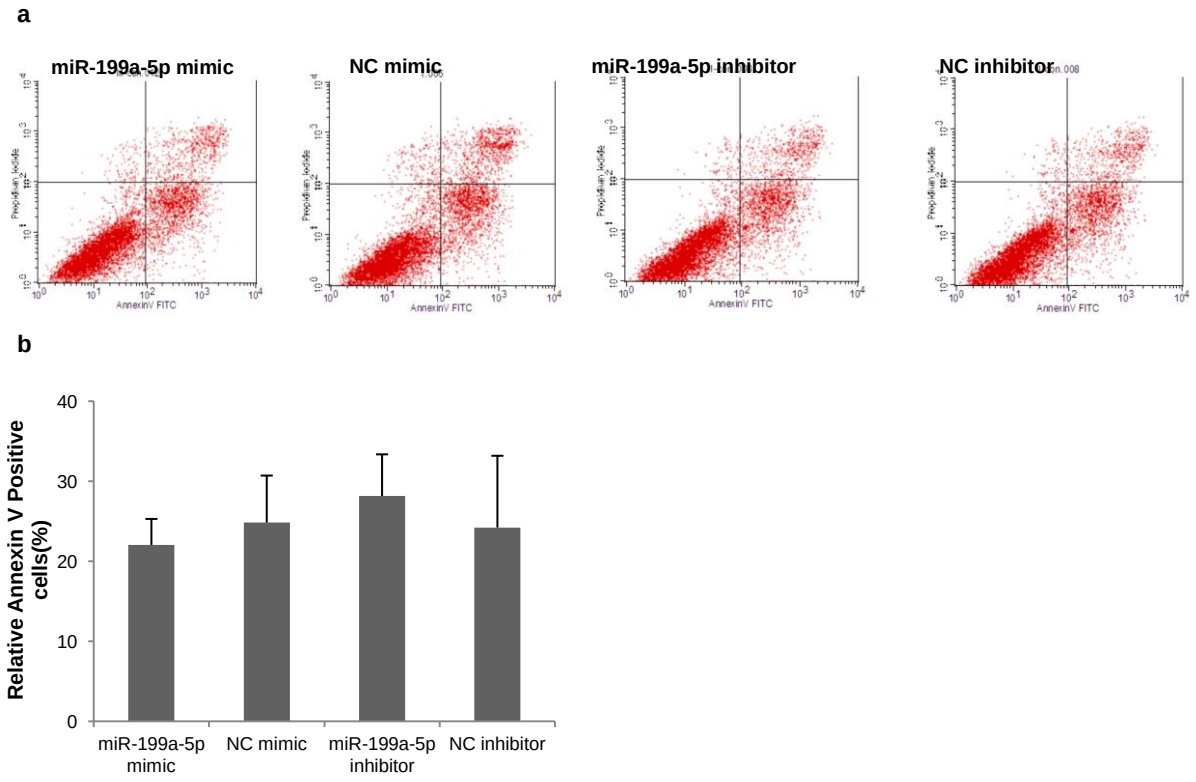
2. **Fig. S2. Apoptotic nuclei stained using the TUNEL technique in the hippocampi CA1 region of the control group (a) and the IUGR group (b) of the DOL1 rats.** Original magnification ×400. Scale bars = 200μm.



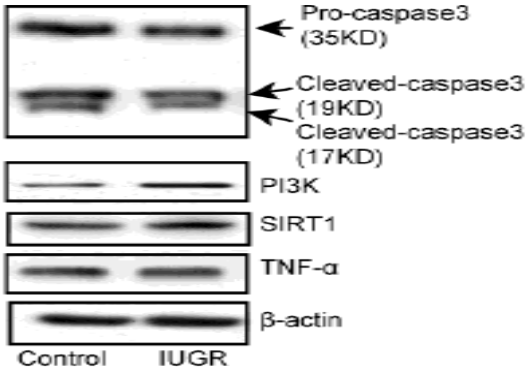
3**. Figure S3. PC12 Cell culture and treatment. (a)** PC12 cell culture. **(b)** PC12 cells treated by NGF. **(c)** PC12 cells staining by NSE. Original magnification ×100.



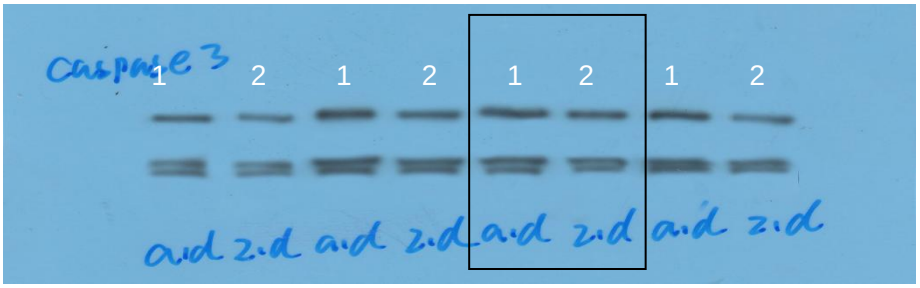
4. **Fig. S4. MiR-199a-5p inhibitors PI3k,TNF-α, SIRT1 and Casp3.** (**a, b**). primary neuronal culture.a, ×100;b, ×200. （**c, d, e**）primary neurons staining by NSE and DAPI. **(h, i, j, k**) Western blot analysis of p-PI3K,TNF-α, SIRT1 and Casp3 protein expression in primary neurons following transfection. Scale bars = 100μm.



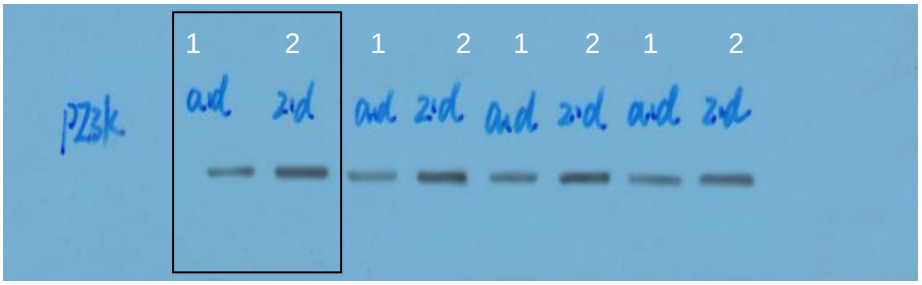
5. **Fig. S5. Effect of miR-199a-5p on PC12 cells apoptosis detected by flow cytometer.** **(a)** Flow cytometric analysis of PC12 cells were treated with miR-199a-5p mimics and inhibitors. **(b)** Data are presented as the percentage of Annexin Vpositive cells which analyzed by flow cytometer. The values are expressed as the mean±SD. **P*<0.05, ***P*<0.01.



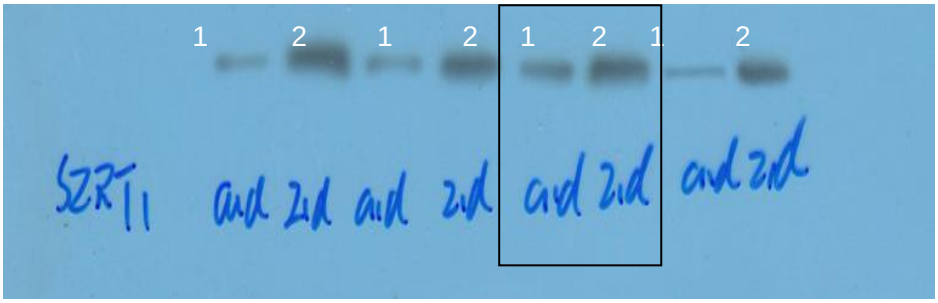
Caspase-3:



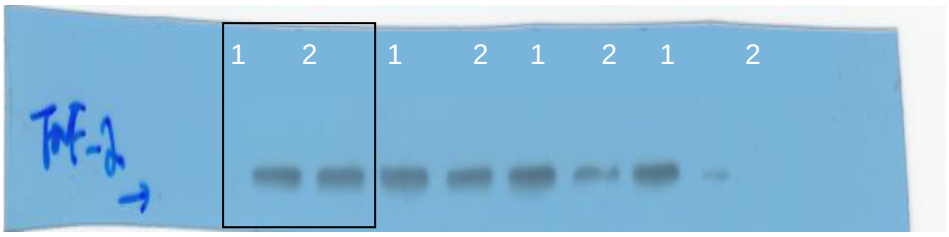
PI3K:



SIRT1:



TNF-α:



β-actin:

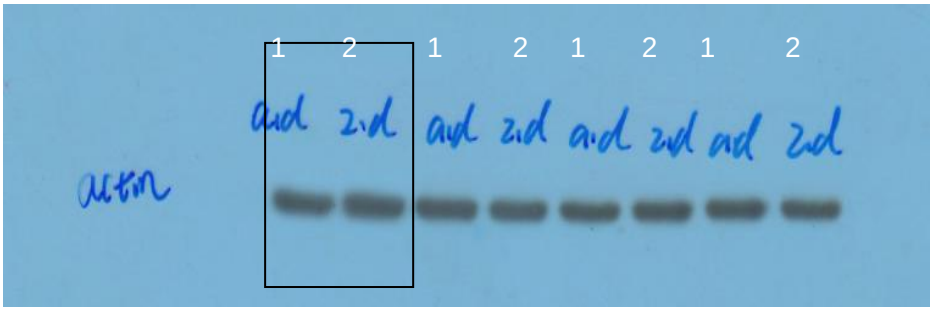
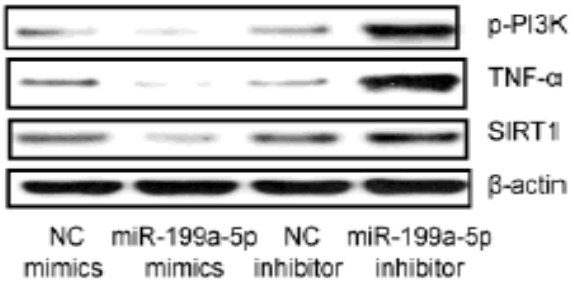
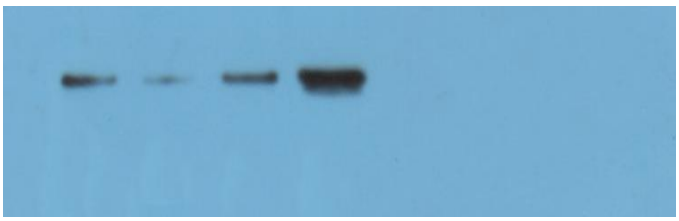


Figure S6. Orignial Western image for Figure 3a. 1, control group; 2, IUGR group.



p-PI3K



TNF-a

SIRT1

β-actin

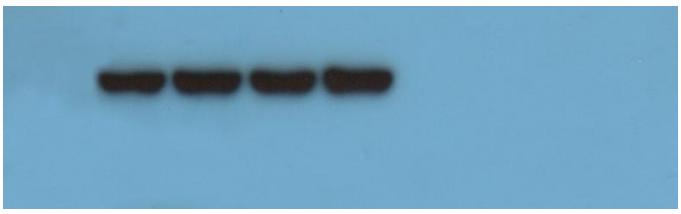


Figure S7. Orignial Western image for Fig. 4f.

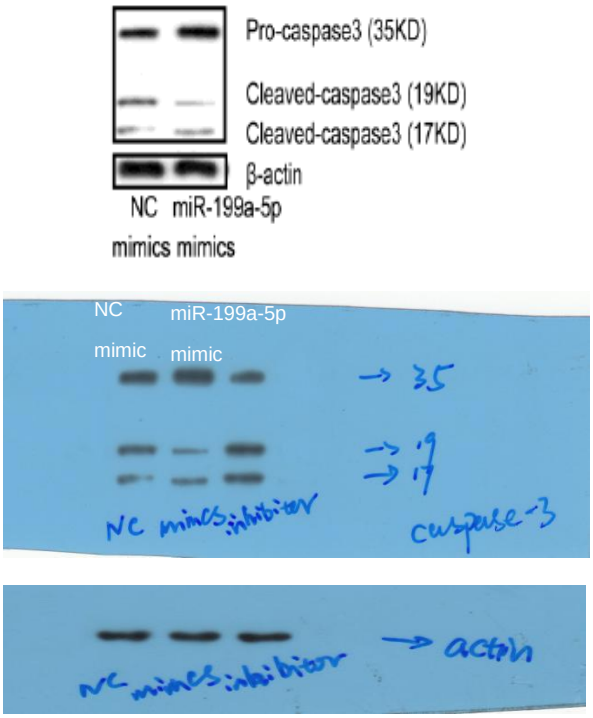
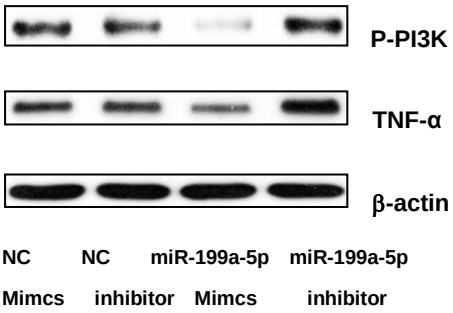


Figure S8. Orignial Western image for Fig. 5b.



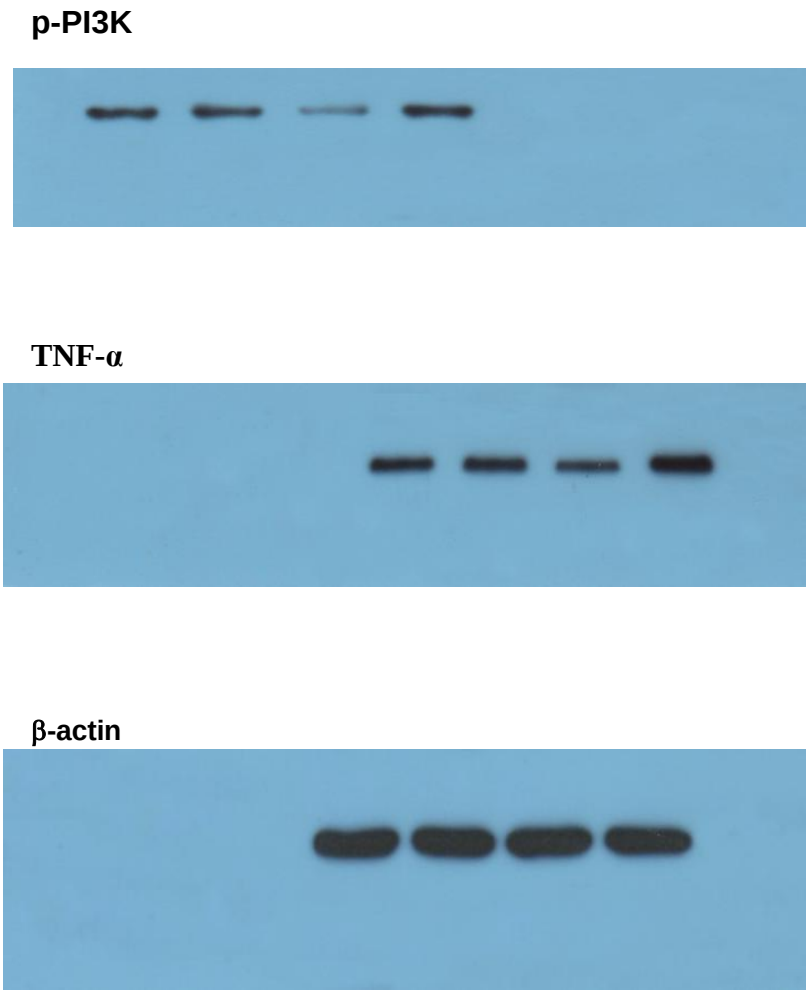
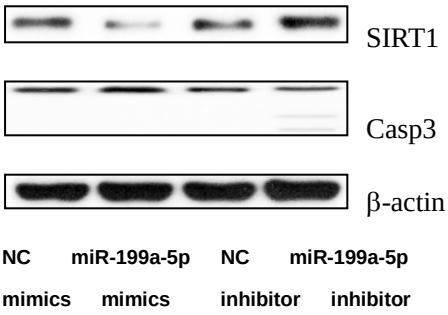
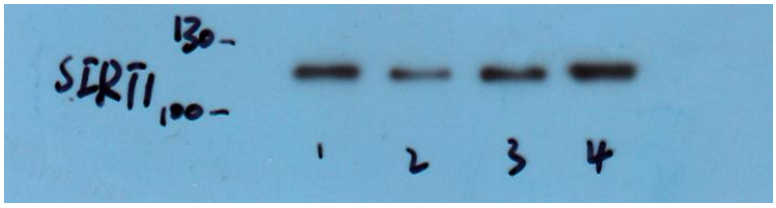


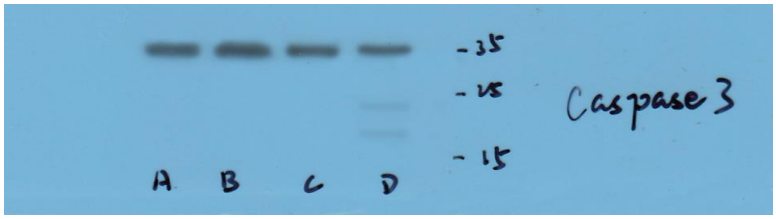
Figure S9. Orignial Western image for Fig. S4f.



SIRT1



Casp3



β-actin

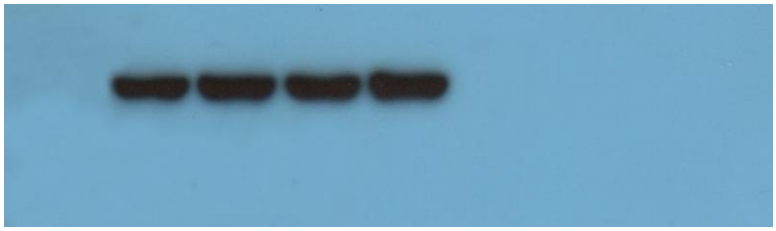


Figure S10. Orignial Western image for Fig.S4g.

Mature miRNA name	**Mature sequences (5'-3')**		**Predicted target gene**
rno-miR-199a	rno-miR-199a-5p	CCCAGUGUUCAGACUACCUGUUC	Sirt1,Atp2,Tnf,casp3, pole3,acer2,Sumo3,pi3k
	rno-miR-199a-3p	ACAGUAGUCUGCACAUUGGUUA	Rab6a,Bre,Aspa,Ankfy1, sgsm2,Depdc5,March10
rno-miR-325	rno-miR-325-5p	CCUAGUAGGUGCUCAGUAAGUGU	Trip11,Pla2g2c,PIk1,Zfp407, Ncbp3,Tnfsf9,Nr2f2
	rno-miR-325-3p	UUUAUUGAGCACCUCCUAUCAA	Npc2,vamp7,Fpr2,Prmt1, IkIf1,Nol8,cdn1
rno-mir-219	rno-miR-219a-1-3p	AGAGUUGCGUCUGGACGUCCCG	Bcor,Styl5,Tspan7,Lancl3,cybb,Dynlt3,Rbm3
	rno-miR-219a-5p	UGAUUGUCCAAACGCAAUUCU	Otc,Hdac6,Apex2,Rrag13, Pdha1,Pola1,Flt3
rno-miR-664	rno-miR-664-1-5p	CUGGCUGGGGAAAAAGAUUGG	Slc25a44, Dicer1, Zbtb34, Ncoa1,Insm2,Dnai2,Slco1b2
	rno-miR-664-3p	UAUUCAUUUACUCCCCAGCCUA	Paip1, Ndrg4, Ndrg4, Hey2, Nipal1, Aqp1, Slc2a5, Itga9,
rno-miR-551b	rno-miR-551b-5p	GAAAUCAAGCUUGGGUGAGACCU	Nbl1 ,Casp9, Dctn4, Coq4, Klf12, Nhsl1, Usf1, Hoxa2
	rno-miR-551b-3p	GGCGACCCAUACUUGGUUUCAGU	Srsf5, Btbd7, Ipo7, Skap2, Trak1, Cbll1, Ptprh,Skp2
rno-mir-34C	rno-miR-34c-3p	AAUCACUAACCACACAGCCAGG	Cpsf4, Glrx, Lox, Hdhd2, Polr2c, Rnf2,Lix1, Eepd1
	rno-miR-34c-5p	AGGCAGUGUAGUUAGCUGAUUGC	Bcor,Tspan7,Cybb, Slc38a5, Porcn, Wdr13, Eras, Plp2
rno-miR-195	rno-miR-195-5p	UAGCAGCACAGAAAUAUUGGC	Flot1, Eya3, swt1,Rff1 , Cngn3, Ifitm1, Nodal, Thoc2
	rno-miR-195-3p	CCAAUAUUGGCUGUGCUGCUCCA	Tbp,P2rx4, Szrd1, Lmo1,Cdh8,Sf1,Megf11
rno-miR-204	rno-miR-204-5p	UUCCCUUUGUCAUCCUAUGCCU	Casp3,Sirt1,Zfx,Prima1,Tcea3,Prrc2b,PdcI,Rnd3,Sf1
	rno-miR-204-3p	GCUGGGAAGGCAAAGGGACGUU	Pdcl3,Pla2r1,Banf1,Dtd2, Xpo7,Lrfn2,Lmf1,Timp2
rno-miR-483	rno-miR-483-5p	AAGACGGGAGAAGAGAAGGGAG	Bcor,Otc,Xk,Cybb,Lancl3,Porch,Ebp,Wdr13,Rbm3
	rno-miR-483-3p	CACUCCUCCCCUCCCGUCUUGU	Sra1,Fech,Galr1,Bap1,Scn1b ,Git1,Hipk2,Wipf3,Tns3
rno-miR-322	rno-miR-322-5p	CAGCAGCAAUUCAUGUUUUGGA	Lrp6,Ovol1,G2e3,Hoxa4, Lamc2,mitf,Cxcl12,Ret
	rno-miR-322-3p	AAACAUGAAGCGCUGCAACA	Wdr26,Klf8,Gnrhr,Polh,Irf5, Nfib,Bdp1,Gpm6a

rno-miR-329	rno-miR-329-5p	AGAGGUUUUCUGGGUCUCUGUUUC	Nadk2,Ccdc2,Strd4,Gfra3, Cd14,Gde1,Scai,Ehd1
	rno-miR-329-3p	AACACACCCAGCUAACCUUUUU	Brat1,Sox6,Wdtc1,Pbx3, Rgs8,Tead2,Ankfy1,Etv3
rno-miR-196b	rno-miR-196b-5p	UAGGUAGUUUCCUGUUGUUGGG	Xylt1,Tmx3,Ptcd1,neurl1, Nxt2,Cu14b,Wtap,Fv1
	rno-miR-196b-3p	UCGACAGCACGACACUGCCUUCA	Girx5,CIdn2,Zmiz1,Megf11, Gfy,KdeIr1,Smarcc1,Mpp2
rno-miR-449a	rno-miR-449a-5p	UGGCAGUGUAUUGUUAGCUGGU	Calr4,Pan3,Mafk,Gpc2,, Traf3,Rftn2,Sumo1,Naif1
	rno-miR-449a-3p	CAGCUAACAUGCAACUGCUCUC	Nfib,Tnp1,Ikzf2,Sstr1, Smoc2,Mill1,Casp2,Ube2n
rno-miR-324	rno-miR-324-5p	CGCAUCCCCUAGGGCAUUGGUGU	Prr36, Zfp498, Cinp, Laptm5,Nipal3, Poc5, Ctdsp1, Gla
	rno-miR-324-3p	CCACUGCCCCAGGUGCUGCUGG	Pdha1, Baz2a, Nipal3, Enc1, Gypc, Map2, Cytip, Tcf23
rno-miR-448	rno-miR-448-5p	AACAUCCUGCAUAGUGCUGCCA	Atp6ap2, Bcor, Otc, Sytl5, Srpx, Xk, Cybb, Dynlt3
	rno-miR-448-3p	UUGCAUAUGUAGGAUGUCCCA	Bcor, Srpx, Tbc1d25, Rbm3,Ftsj1, Wdr13, , Gata1,Pqbp1
rno-miR-375	rno-miR-375-5p	GCGACGAGCCCCUCGCACAAACC	Mrm2, Sfn,Usp48, Fgf1, Rsad2, C5ar1, Grin2d, Gprin3
	rno-miR-375-3p	UUUGUUCGUUCGGCUCGCGUGA	Mark3, Scamp1, Nme5,Cys1, Asap2, Nr1h2,Gsg2, Relt
rno-miR-702	rno-miR-702-5p	GUGAGUGGGGUGGUUGGCAUG	Akap4, Cinp,Traf3, Stpg1, Lypla2, Kazn, Pla2g2d, Wdr41,
	rno-miR-702-3p	UGCCCACCCUUUACCCCACUCCA	Xk,Tsr2, Ephb4, Cdk5r2, Arl13a, Zadh2, Rce1, Snx32,
rno-miR-541	rno-miR-541-5p	AAGGGAUUCUGAUGUUGGUCACACU	Syp, Pan3, Usp48, Shtn1, Smn1, Mat1a, Tnfsf18, Park7
	rno-miR-541-3p	AGUGGCGAACACAGAAUCCAUAC	Cpsf2, Cldn2, Atf6, Pcp4l1, Ptpn13, Rhot1, Coa4, Ptprr
rno-mir-218b	CAUGGUUAGAUCAAGCACAA		SMCP,POLR2G, TEX14, H2AFZ, ERI2, TRPV5, PIGW, PPP1R14C, SGK494, MBNL3

Table S1. The sequence and target gene of differentially expressed miRNAs