

Supplementary Table 1. Resources used in experiments.

Resources	Source	Identifier
Antibodies		
Rabbit anti-Gabra5 antibody	Abcam https://www.citeab.com/antibodies/731866-ab10098-anti-gaba-a-receptor-alpha-5-gabra5-antibody	Cat# ab10098
Mouse anti-Orexin B antibody	Santa Cruz Biotechnology PMID: # 34875226 Wang et al. 2021. Cell.	Cat# sc-80263
Rabbit anti-Orexin A antibody	Abcam	Cat# ab255293
Rabbit anti-MCH antibody	Phoenix Pharmaceuticals https://www.phoenixpeptide.com/products/view/Antibodies/H-070-47	Cat# H-070-47
Guinea pig anti-GABA antibody	Millipore https://www.merckmillipore.com/KR/ko/product/Anti-GABA-Antibody,MM_NF-AB175?ReferrerURL=https%3A%2F%2Fwww.google.com%2F#documentation	Cat# ab175
Chicken anti-GFAP antibody	Millipore https://www.merckmillipore.com/KR/ko/product/Anti-Glial-Fibrillary-Acidic-Protein-Antibody,MM_NF-AB5541?ReferrerURL=https%3A%2F%2Fwww.google.com%2F#documentation	Cat# AB5541
Rabbit anti-S100 β antibody	Abcam https://www.abcam.com/s100-beta-antibody-ab41548.html	Cat# ab41548
Mouse anti-Maob antibody	Santa Cruz Biotechnology PMID: # 34834946 Mpekoulis et al. 2021. Viruses. 13: PMID: # 31491076 2019. ACS Chem Neurosci. PMID: # 31501572 Nat. Neurosci. 22: 1731-1742.	Cat# sc-515354
Mouse anti-NeuN antibody	Millipore https://www.citeab.com/antibodies/226230-mab377-anti-neun-antibody-clone-a60	Cat# MAB377
Guinea pig anti-NeuN antibody	Millipore https://www.citeab.com/antibodies/224946-abn90-anti-neun-antibody	Cat# ABN90
rabbit anti-c-fos antibody	Cell signaling https://www.biocompare.com/9776-Antibodies/1540778-cFos-9F6-Rabbit-mAb/	Cat# 2250S
Bacterial and Virus Strains		
Recombinant pseudo rabies virus (PRV)-CAG-EGFP	BrainVTA	N/A
AAV5-mGabra5-EGFP-Cre virus	This study	N/A
AAV _{DJ/8} -hSyn-DIO-mCherry virus	KIST virus facility	N/A
AAV _{DJ/8} -hSyn-DIO-hM4D(Gi)-mCherry virus	(Krashes et al., 2011)	Addgene #44362

Lenti-pSicoR scrambled shRNA virus	(Woo et al., 2020)	N/A
Lenti-pSicoR Gabra5 shRNA virus	This study	N/A
Lenti-pSico scrambled shRNA virus	(Nam et al., 2020)	N/A
Lenti-pSico MAOB shRNA virus	(Nam et al., 2020)	N/A
AAV-GFAP-Cre-mCherry virus	(Oh et al., 2019)	N/A
Chemicals, Peptides, and Recombinant Proteins		
DAPI (4',6-Diamidino-2-Phenylindole, Dihydrochloride)	Pierce	Cat# D1306; RRID: AB_2629482
D-APV	Tocris	Cat# 0106; CAS: 79055-68-8
CNQX disodium salt	Tocris	Cat# 1045; CAS: 479347-85-8
(-)-Bicuculline methobromide	Tocris	Cat# 0109; CAS: 73604-30-5
CNO	Tocris	Cat# 4936; CAS: 34233-69-7
High-fat diet (60 kcal% Fat)	Research Diet	D12492
KDS2010	(Park et al., 2019)	CAS: 1894207-45-4
KDS1524	This paper	N/A
R(-)-deprenyl hydrochloride, selegiline	Sigma aldrich	Cat# M003; CAS: 14611-52-0
D-(+)-Glucose	Merck	Cat# 108337
Insulin from porcine pancreas	Sigma aldrich	Cat# I5523; CAS: 12584-58-6
SHIELD perfusion solution	Lifecanvas	Cat# PCK-500
Experimental Models: Cell Lines		
Human: HEK293T cells	ATCC (American Type Culture Collection)	CRL-3216; RRID: CVCL_0063
Experimental Models: Organisms/Strains		
Mouse: Mouse: C57BL6/J	The Jackson Laboratory	Cat# JAX: 000664
Oligonucleotides		
shRNA targeting sequence: Gabra5; GATGAAAGGCTGCGGTTTAAG	This paper	N/A
shRNA targeting sequence: Maob; AATCGTAAGATACGATTCTGG	(Jo et al., 2014)	N/A
Primer: 18S qRT-F; TGGCTC ATTAATCAGTTATGGT	(Orozco-Solis et al., 2016)	MGI:97943
Primer: 18S qRT-R; GTCGGCATGTATTAGCTCTAG	(Orozco-Solis et al., 2016)	MGI:97943
Primer: Ucp1 qRT-F; ACTGCCACACCTCCAGTCATT	(Orozco-Solis et al., 2016)	MGI:98894
Primer: Ucp1 qRT-R; CTTTGCCTCACTCAGGATTGG	(Orozco-Solis et al., 2016)	MGI:98894
Primer: Cidea qRT-F; TTCAAGGCCGTGTTAAGGAATC	(Castellanos-Jankiewicz et al., 2021)	NM_007702
Primer: Cidea qRT-R; CCAGGAAGTGTCCCGTCATC	(Castellanos-Jankiewicz et al., 2021)	NM_007702
Primer: Prdm16 qRT-F; CAGCACGGTGAAGCCATTC	(Orozco-Solis et al., 2016)	MGI:1917923
Primer: Prdm16 qRT-R; GCGTGCATCCGCTTGTG	(Orozco-Solis et al., 2016)	MGI:1917923
Primer: Pgca1 qRT-F; AACCACACCCACAGGATCAGA	(Orozco-Solis et al., 2016)	MGI:1342774
Primer: Pgc1a qRT-R; TCTTCGCTTTATTGCTCCATGA	(Orozco-Solis et al., 2016)	MGI:1342774

Primer: Dio2 qRT-F; CCACCTGACCACCTTTCACT	(Orozco-Solis et al., 2016)	MGI:1338833
Primer: Dio2 qRT-R; TGGTTCCGGTGCTTCTTAAC	(Orozco-Solis et al., 2016)	MGI:1338833
Primer: Adrb3 qRT-F; CGACATGTTCTCCACAAATCA	(Castellanos-Jankiewicz et al., 2021)	NM_013462
Primer: Adrb3 qRT-R; TGGATTCCTGCTCTCAAATA	(Castellanos-Jankiewicz et al., 2021)	NM_013462
Recombinant DNA		
Gabra5 full clone	Addgene	RRID: Addgene_118956
pAAV-mGabra5-EGFP-Cre	KIST virus facility	N/A
pAAV-hSyn-DIO-hM4D(Gi)-mCherry	(Krashes et al., 2011)	RRID: Addgene_44362
pAAV-hSyn-DIO-mCherry	KIST virus facility	N/A
pAAV-GFAP-Cre-mCherry	(Oh et al., 2019)	N/A
pLenti-pSicoR scrambled shRNA	(Woo et al., 2020)	N/A
pLenti-pSicoR Gabra5 shRNA	This study	N/A
pLenti-pSico scrambled shRNA	(Nam et al., 2020)	N/A
pLenti-pSico Maob shRNA	(Nam et al., 2020)	N/A
Software and Algorithms		
GraphPad Prism 9	GraphPad software	https://www.graphpad.com/scientific-software/prism/ ; RRID: SCR_015807
Imaging WorkBench 6.2	Indec BioSystems	http://www.indecbiosystems.com/imagingworkbench/ ; RRID: SCR_016589
ImageJ	National Institutes of Health	https://imagej.nih.gov/ij/ ; RRID: SCR_003070
Imaris 9.0.1	Oxford Instruments	https://imaris.oxinst.com/support/imaris-release-notes/9-1-0
pClamp 10.4	Molecular Devices	http://www.moleculardevices.com/products/software/ ; RRID: SCR_011323