

Appendix 1 The specific genes enriched by GO entries. GO, Gene Ontology

GO_description: mitochondrial electron transport, NADH to ubiquinone

Gene: Ndufa7/Park7/Ndufb8/Iscu/Ndufb6/Ndufv1/ND2/Ndufa8/Ndufs8/Pink1/Ndufb9/Coq9

GO_description: positive regulation of cellular component biogenesis

Gene: Gsk3b/Braf/Map1b/Rictor/Tsc1/Akap9/Fmn1/Setx/Flna/Fnbp11/Dync1h1/Ccdc88a/Chga/Iqgap1/Ralb/Mk1/Atp7a/Mien1/Arhgap35/Fnip2/Clasp1/Dock11/Cnot6/Tpr/Cep295/Rps3/Brk1/Fer/Togaram1/Cnot1/Flot1/Rock2/Dhx36/Trmt112/Ptprj/Id1/Dlg1/Hspa1b/Msn/AABR07029605.1/Pan3/Clu/Nr1h2/Fmr1/Psrc1/Cdc34/Slf2/Adnp/Wasf2/LOC108348108/Flrt3/Sdc4/Rack1/Bin1/Rhoc/Hdac4/Ccp110/Dhx33/AABR07053687.1/Bax/Col16a1/Dlg5/Was1/Mecp2/Emilin1/Lrrc24/Hsp90aa1/Atm/Cdk5rap2/Pfn1/Plek/Epb4115/Jun/Mief2/Nlgn3/Sema4a/Tapt1/Rhobtb2/Wars/Mtor/Creb1/Rock1

GO_description: ATP synthesis coupled electron transport

Gene: Ndufa7/Park7/Ndufb8/Iscu/Uqcr10/Sdha/Ndufb6/ND5/Uqcrh/Cyc1/Ndufv1/ND2/Ndufa8/Sdhc/Cox7c/Uqcr1/Ndufs8/Pink1/Mecp2/Ndufb9/Coq9/ND4L

GO_description: histone modification

Gene: Kat6a/Nsd1/Kdm7a/AABR07059168.2/Ash11/Kmt2a/Crebbp/Huwe1/AABR07058539.1/Kmt2e/Kmt5b/Sin3b/Setd2/Rif1/Ep300/Actl6b/Kmt5c/Nipbl/Kdm2a/Ep400/Kdm5a/Prkca/Fbl1/Tbl1x/Ncoa3/Cdk5/Prkag1/Pagr1/Sirt3/Hcfc1/Jmjd1c/Wac/Ruvbl1/Rlf/Suz12/Clock/Ubr2/Paxbp1/Kat6b/Prkaa2/Kdm3a/Elk4/Epc2/Phf1/Nsd3/Rybp/Zfp451/Tet1/Dcaf1/Bra1/Fmr1/Smad4/Fbl/Nsd2/AABR07044925.1/Pink1/Mier1/Phf20/Mysm1/Cdc73/Hdac4/Setd5/Mrgbp/Supt6h/Brpf3/Msl2/Cena2/Ehmt1/Cul4b/Mecp2/Atm/Jdp2/Atrx/Trip12/Kdm4c/Ring1/Hdac5/Ncoa1/Ogt/Ubr5/Smarcad1/Prkaa1/Rsf1

GO_description: peptidyl-lysine modification

Gene: Kat6a/Nsd1/AABR07059168.2/Ash11/Kmt2a/Crebbp/AABR07058539.1/Kmt2e/Kmt5b/Setd2/Rif1/Ep300/Actl6b/Kmt5c/Ranbp2/Ep400/Fam173a/Park7/Glrx5/Pias2/Ncoa3/Prkag1/Pagr1/Sirt3/Hcfc1/Senp5/Ruvbl1/Rlf/Hdac10/Suz12/Clock/Kat6b/Prkaa2/Kdm3a/Camkmt/Loxl2/Pias1/Epc2/Phf1/Nsd3/Zfp451/Bra1/Smad4/Hmg20b/Nsd2/AABR07044925.1/Phf20/Sirt5/Por/Hdac4/Uba2/Plod3/Setd5/LOC103689978/Mrgbp/Supt6h/Brpf3/Msl2/Ehmt1/Mecp2/Stx1a/Bloc1s1/Atrx/Arnt/Kdm4c/Ncoa1/Ogt/Prkaa1/Rsf1

GO_description: mitochondrial protein complex

Gene: Atp5f1e/Atp5mc1/Ndufa3/Ndufa4l2/Mpv17l2/Atp5po/Mrps7/Ndufa7/Tomm6/Mrpl2/Mrpl55/Ndufb8/Uqcr10/Sdha/Ndufb3/Mrpl41/Atp5pd/Ndufb6/LOC100910528/Mrpl14/ND5/Uqcrh/ND1/Atp5mg/Cyc1/Ndufv1/Pam16/Ndufa6/Timm13/ND2/Ndufa2/Timm17a/Atp5f1d/Atp5mf/Ndufa8/Sdhc/Atp5mc2/Uqcr1/Mrps26/Ndufs8/Mrps12/Sp7/Ndufb2/Tomm40/Mrpl38/LOC103693430/Timm23/Mrpl22/Mrps34/Mrpl28/Bax/Mrpl23/Ndufv3/Mrps9/Mrpl12/Mrpl43/Dap3/Atp5me/Mrpl4/Ndufb7/LOC100363268/Ndufb9/Ndufs7/Mrpl57/ND4L/mrpl9/Nsun3/Smtd1

GO_description: inner mitochondrial membrane protein complex

Gene: Atp5f1e/Atp5mc1/Ndufa3/Ndufa4l2/Atp5po/Ndufa7/Ndufb8/Uqcr10/Sdha/Ndufb3/Atp5pd/Ndufb6/ND5/Uqcrh/ND1/Atp5mg/Cyc1/Ndufv1/Pam16/Ndufa6/ND2/Ndufa2/Timm17a/Atp5f1d/Atp5mf/Ndufa8/Sdhc/Atp5mc2/Uqcr1/Ndufs8/Sp7/Ndufb2/LOC103693430/Timm23/Ndufv3/Atp5me/Ndufb7/LOC100363268/Ndufb9/Ndufs7/ND4L/Smtd1

GO_description: mitochondrial membrane part

Gene: Atp5f1e/Atp5mc1/Ndufa3/Ndufa4l2/Atp5po/Coq8b/Ndufa7/Tomm6/Slc25a19/Ppox/Ndufb8/Uqcr10/Sdha/Ndufb3/Atp5pd/Ndufb6/ND5/Uqcrh/ND1/Atp5mg/Cyc1/Ndufv1/Pam16/Ndufa6/ND2/Ndufa2/Coq8a/Timm17a/Atp5f1d/Atp5mf/Ndufa8/Sdhc/Atp5mc2/Cisd1/Uqcr1/Ndufs8/Sp7/Ndufb2/Pink1/Tomm40/LOC103693430/Cox7a2/Timm23/Ndufv3/Bak1/Atp5me/Coq7/Opa1/Ndufb7/LOC100363268/Ndufb9/Dmd/Ndufs7/ND4L/Smtd1

GO_description: mitochondrial respiratory chain

Gene: Ndufa3/Ndufa4l2/Ndufa7/Ndufb8/Uqcr10/Sdha/Ndufb3/Ndufb6/ND5/Uqcrh/ND1/Cyc1/Ndufv1/Ndufa6/ND2/Ndufa2/Ndufa8/Sdh/Uqcrc1/Ndufs8/Ndufb2/Cox7a2/Ndufv3/Ndufb7/LOC100363268/Ndufb9/Ndufs7/ND4L

GO_description: respiratory chain complex

Gene: Ndufa3/Ndufa4l2/Ndufa7/Ndufb8/Uqcr10/Sdha/Ndufb3/Ndufb6/ND5/Uqcrh/ND1/Cyc1/Ndufv1/Ndufa6/ND2/Ndufa2/Ndufa8/Sdh/Uqcrc1/Ndufs8/Ndufb2/Ndufv3/Ndufb7/LOC100363268/Ndufb9/Ndufs7/ND4L

Appendix 2 The specific genes enriched by KEGG pathways. KEGG, Kyoto Encyclopedia of Genes and Genomes

KEGG_description: Thermogenesis

Gene: Pnpla2/Cox8a/Tsc1/Atp5f1e/Atp5mc1/Ndufa3/Ndufa4l2/Actl6b/Atp5po/Ndufa7/Frs2/Ndufaf3/Ndufb8/Uqcr10/Sdha/Ndufb3/Atp5pd/Ndufb6/ND5/Uqcrh/ND1/Atp5mg/Cyc1/Sos1/Prkaca/Ndufv1/Mgll/Ndufa6/ND2/Slc25a20/Ndufa2/Atp5f1d/Prkaa2/Kdm3a/Atp5mf/Ndufa8/Sdh/Atp5mc2/Mapk12/Cox7c/Uqcr1/Cox14/Creb3l2/Ndufs8/Cox6b1/Nras/Ndufb2/Cox7a2/Spag5/Ndufb4/Ndufv3/Cox20/Kras/Acs14/Mapk13/Acs13/Atp5me/Smarcd2/Ndufb7/LOC100363268/Ndufb9/Coa4/Rps6ka6/Ndufs7/Akt1s1/Mtor/Arid1a/ND4L/Creb1/Prkaa1

KEGG_description: Oxidative phosphorylation

Gene: Cox8a/Atp5f1e/Atp5mc1/Ndufa3/Ndufa4l2/Atp5po/Ndufa7/Ndufb8/Uqcr10/Sdha/Ndufb3/Atp5pd/Ndufb6/ND5/Uqcrh/ND1/Atp5mg/Cyc1/Atp6v0e1/Ndufv1/Lhpp/Ndufa6/ND2/Ndufa2/Atp5f1d/Atp5mf/Ndufa8/Sdh/Atp5mc2/Cox7c/Uqcr1/Ndufs8/Atp6v1d/Cox6b1/Ndufb2/Atp6v0b/Atp6v1g1/Cox7a2/Ndufb4/Ndufv3/Atp5me/Ndufb7/LOC100363268/Ndufb9/Ndufs7/Atp6v1f/Atp6v1c1/ND4L

KEGG_description: Parkinson disease

Gene: Ddit3/Cox8a/Ern1/Atp5f1e/Atp5mc1/Psmb7/Ndufa3/Ndufa4l2/Calm3/Atp5po/Ndufa7/Park7/Ube2g2/Ndufb8/Sem1/Uba52/Psmb6/Kif5b/Uqcr10/Sdha/Ndufb3/Atp5pd/Ndufb6/Htra2/ND5/Uqcrh/ND1/Cyc1/Kif5a/Psmb3/Prkaca/Ndufv1/Atf6/Ndufa6/Uba7/ND2/Ndufa2/Slc25a4/Atp5f1d/Ndufa8/Sdh/Atp5mc2/Klc4/Cox7c/Uqcr1/Tubb2a/Ubc/Psmb4/Ndufs8/Psmd4/Cox6b1/Ndufb2/Pink1/Cox7a2/Ndufb4/Bax/Ndufv3/Tubb4b/Th/Txn1/Txn2/Calm2/Ndufb7/Ube2l6/Uchl1/LOC100363268/Ndufb9/Psmd9/Ndufs7/Psmc2/ND4L

KEGG_description: Huntington disease

Gene: Cox8a/Crebbp/Polr2a/AABR07058539.1/Ern1/Atp5f1e/Atp5mc1/Gnaq/Psmb7/Ndufa3/Ndufa4l2/Gpx1/Ep300/Atp5po/Ndufa7/Polr2e/Sp1/Ndufb8/Sem1/Psmb6/Kif5b/Uqcr10/Sdha/Ndufb3/Atp5pd/Ndufb6/ND5/Uqcrh/Sod1/ND1/Rb1cc1/Cyc1/Kif5a/Psmb3/Ndufv1/Ndufa6/ND2/Ndufa2/Slc25a4/Atp5f1d/Ndufa8/Sdh/Atp5mc2/Cltc/Klc4/Cox7c/Uqcr1/Creb3l2/Tubb2a/Psmb4/Ndufs8/Psmd4/Plcb4/Cox6b1/Ndufb2/AABR07005593.1/Cox7a2/Ndufb4/Bax/Ndufv3/Cltb/Tubb4b/Stx1a/LOC103690054/Dctn3/Atg101/Ndufb7/LOC100363268/Ndufb9/Cacna1b/Psmd9/Ndufs7/Dctn2/Mtor/Psmc2/ND4L/Creb1

KEGG_description: Retrograde endocannabinoid signaling

Gene: Faahl/Gnaq/Ndufa3/Gnb5/Ndufa4l2/Ndufa7/Prkca/Ndufb8/Ndufb3/Gng3/Ndufb6/ND5/ND1/Prkaca/Ndufv1/Mgll/Ndufa6/ND2/Ndufa2/Gabrb3/Ndufa8/Mapk12/Ndufs8/Plcb4/Ndufb2/Ndufb4/Gng8/Ndufv3/Mapk13/Ndufb7/LOC100363268/Ndufb9/Cacna1b/Ndufs7/ND4L

KEGG_description: Lysine degradation

Gene: Nsd1/AABR07059168.2/Ash11/Kmt2a/Kmt2e/Kmt5b/Setd2/Kmt5c/Prkag1/Prdm2/Camkmt/Nsd3/Acat1/Smyd3/Aldh7a1/Gcdh/Nsd2/Hadh/Plod3/Ehmt1

KEGG_description: Non-alcoholic fatty liver disease (NAFLD)

Gene: Ddit3/Cox8a/Gsk3b/Ern1/Akt3/Itch/Ndufa3/Ndufa4l2/Ndufa7/Ndufb8/Uqcr10/Sdha/Ndufb3/Ndufb6/Uqcrh/Cyc1/Ndufv1/Ndufa6/Ndufa2/Prkaa2/Ndufa8/Sdh/Cox7c/Uqcr1/Ndufs8/Cox6b1/Ndufb2/Cox7a2/Rac3/Ndufb4/Bax/Ndufv3/Mlxip/Jun/Ndufb7/LOC100363268/Ndufb9/Ndufs7/Pik3cb/Prkaa1