

Supplementary Table 3. Enriched KEGG pathway terms with DEGs

PathwayID	Description	GeneRatio	BgRatio	p-value	q-value	Count	Genes
mmu05206	MicroRNAs in cancer	16/191	142/7510	9.375e-07	2.072e-04	16	Abcb1b, Kif23, Map2k1, Ezr, Marcks, Crkl, Hoxd10, Rdx, Ccnd1, Nfkb1, Crebbp, Spry2, Tnn, Hmga2, Cdk6, Tpm1
mmu05140	Leishmaniasis	9/191	64/7510	2.030e-05	2.243e-03	9	Mapk12, Marcks11, Ptpn6, Ncf4, Cyba, H2-DMb1, Nfkb1, Mapk11, C3
mmu04668	TNF signaling pathway	12/191	111/7510	2.314e-05	1.705e-03	12	Mapk12, Edn1, Map2k1, Traf1, Ccl20, Map2k7, Vcam1, Cxcl10, Fas, Nfkb1, Ripk1, Mapk11
mmu04622	RIG-I-like receptor signaling pathway	8/191	69/7510	2.127e-04	1.175e-02	8	Mapk12, Azi2, Dhx58, Cxcl10, Nfkb1, Ripk1, Cyld, Mapk11
mmu05220	Chronic myeloid leukemia	8/191	73/7510	3.216e-04	1.421e-02	8	Map2k1, Crkl, Ccnd1, Mecom, Shc2, Nfkb1, Cdk6, Smad3
mmu05200	Pathways in cancer	23/191	397/7510	4.684e-04	1.725e-02	23	Lama4, Map2k1, Itga6, Tcf7, Bdkrb1, Ptch1, Gli1, Crkl, Ccnd1, Traf1, Mecom, Ncoa4, Fas, Nfkb1, Crebbp, Jup, Wnt6, Gng8, Fgfr2, Cdk6, Bmp2, Hsp90b1, Smad3
mmu04620	Toll-like receptor signaling pathway	9/191	101/7510	8.079e-04	2.551e-02	9	Mapk12, Spp1, Map2k1, Map2k7, Cxcl10, Irf5, Nfkb1, Ripk1, Mapk11
mmu05205	Proteoglycans in cancer	14/191	203/7510	8.339e-04	2.304e-02	14	Mapk12, Map2k1, Ezr, Hpse, Ptch1, Ptpn6, Dcn, Hoxd10, Rdx, Ccnd1, Fas, Wnt6, Frs2, Mapk11
mmu04722	Neurotrophin signaling pathway	10/191	122/7510	9.304e-04	2.285e-02	10	Mapk12, Rap1a, Map2k1, Crkl, Map2k7, Shc2, Nfkb1, Frs2, Mapk11, Rps6ka2
mmu04350	TGF-beta signaling pathway	8/191	85/7510	9.563e-04	2.113e-02	8	Bmpr1a, Dcn, Tgif2, Crebbp, Cul1, Ltbp1, Bmp2, Smad3
mmu05216	Thyroid cancer	4/191	29/7510	2.100e-03	4.219e-02	4	Map2k1, Tcf7, Ccnd1, Ncoa4
mmu04310	Wnt signaling pathway	10/191	144/7510	3.422e-03	6.302e-02	10	Tcf7, Serpinf1, Ccnd1, Lrp5, Crebbp, Wnt6, Nfatc4, Cul1, Gpc4, Smad3
mmu04933	AGE-RAGE signaling pathway in diabetic complications	8/191	103/7510	3.549e-03	6.033e-02	8	Mapk12, Edn1, Col3a1, Ccnd1, Vcam1, Nfkb1, Mapk11, Smad3
mmu04340	Hedgehog signaling pathway	5/191	50/7510	4.305e-03	6.796e-02	5	Ptch1, Gli1, Wnt6, Bmp2, Gas1
mmu05164	Influenza A	11/191	171/7510	4.363e-03	6.428e-02	11	Mapk12, Map2k1, Oas3, Map2k7, Cxcl10, H2-DMb1, Fas, Dnajc3, Nfkb1, Crebbp, Mapk11

mmu05215	Prostate cancer	7/191	89/7510	5.219e-03	7.209e-02	7	Map2k1, Tcf7, Ccnd1, Nfkb1, Crebbp, Fgfr2, Hsp90b1
mmu00920	Sulfur metabolism	2/191	11/7510	6.088e-03	7.914e-02	2	Sqor, Suox
mmu05217	Basal cell carcinoma	5/191	55/7510	6.837e-03	8.394e-02	5	Tcf7, Ptch1, Gli1, Wnt6, Bmp2
mmu04917	Prolactin signaling pathway	6/191	74/7510	7.128e-03	8.291e-02	6	Mapk12, Map2k1, Ccnd1, Shc2, Nfkb1, Mapk11
mmu05221	Acute myeloid leukemia	5/191	57/7510	8.110e-03	8.962e-02	5	Map2k1, Tcf7, Ccnd1, Nfkb1, Jup
mmu04550	Signaling pathways regulating pluripotency of stem cells	9/191	140/7510	8.500e-03	8.945e-02	9	Mapk12, Bmpr1a, Map2k1, Wnt6, Fgfr2, Dlx5, Mapk11, Bmp2, Smad3
mmu04670	Leukocyte transendothelial migration	8/191	120/7510	9.495e-03	9.538e-02	8	Mapk12, Rap1a, Ezr, Ncf4, Cyba, Vcam1, Ptk2b, Mapk11
mmu04611	Platelet activation	8/191	122/7510	1.053e-02	1.012e-01	8	Mapk12, Rap1a, Col3a1, Prkg2, Prkci, Ptgs1, Mapk11, Snap23
mmu05142	Chagas disease (American trypanosomiasis)	7/191	104/7510	1.292e-02	1.190e-01	7	Mapk12, Gnao1, Fas, Nfkb1, Mapk11, C3, Smad3
mmu04660	T cell receptor signaling pathway	7/191	105/7510	1.364e-02	1.206e-01	7	Mapk12, Map2k1, Ptpn6, Dlg1, Map2k7, Nfkb1, Mapk11
mmu05222	Small cell lung cancer	6/191	84/7510	1.386e-02	1.178e-01	6	Lama4, Itga6, Ccnd1, Traf1, Nfkb1, Cdk6
mmu04010	MAPK signaling pathway	13/191	253/7510	1.559e-02	1.276e-01	13	Mapk12, Rap1a, Map2k1, Cacna1g, Crkl, Mecom, Map2k7, Fas, Nfkb1, Cacna1a, Fgfr2, Mapk11, Rps6ka2
mmu05212	Pancreatic cancer	5/191	66/7510	1.608e-02	1.269e-01	5	Map2k1, Ccnd1, Nfkb1, Cdk6, Smad3
mmu04380	Osteoclast differentiation	8/191	131/7510	1.626e-02	1.239e-01	8	Mapk12, Map2k1, Ncf4, Cyba, Map2k7, Nfkb1, Cyld, Mapk11
mmu00120	Primary bile acid biosynthesis	2/191	16/7510	1.703e-02	1.255e-01	2	Cyp39a1, Ch25h
mmu04068	FoxO signaling pathway	8/191	134/7510	1.862e-02	1.327e-01	8	Mapk12, Map2k1, Usp7, Ccnd1, Crebbp, Plk4, Mapk11, Smad3
mmu05145	Toxoplasmosis	7/191	112/7510	1.954e-02	1.349e-01	7	Lama4, Mapk12, Itga6, H2-DMb1, Gnao1, Nfkb1, Mapk11
mmu00410	beta-Alanine metabolism	3/191	33/7510	2.212e-02	1.481e-01	3	Cndp2, Mlycd, Aldh3a1
mmu04210	Apoptosis	8/191	139/7510	2.312e-02	1.503e-01	8	Map2k1, Il3ra, Traf1, Fas, Nfkb1, Endog, Casp2, Ripk1
mmu05143	African trypanosomiasis	3/191	35/7510	2.689e-02	1.698e-01	3	Lama4, Vcam1, Fas
mmu00220	Arginine biosynthesis	2/191	19/7510	2.694e-02	1.654e-01	2	Glul, Gpt
mmu00250	Alanine, aspartate and glutamate metabolism	3/191	36/7510	2.949e-02	1.761e-01	3	Glul, Gpt, Adss11
mmu05161	Hepatitis B	8/191	146/7510	3.070e-02	1.785e-01	8	Map2k1, Ccnd1, Fas, Nfkb1, Crebbp, Ptk2b, Nfatc4, Cdk6
mmu04062	Chemokine signaling pathway	10/191	197/7510	3.121e-02	1.769e-01	10	Rap1a, Map2k1, Crkl, Ccl20, Cxcl10, Shc2, Nfkb1, Ptk2b, Gng8, Ppbp

mmu04916	Melanogenesis	6/191	99/7510	3.147e-02	1.739e-01	6	Edn1, Map2k1, Tcf7, Gnao1, Crebbp, Wnt6
mmu00531	Glycosaminoglycan degradation	2/191	21/7510	3.502e-02	1.888e-01	2	Hpse, Ids
mmu05152	Tuberculosis	9/191	176/7510	3.662e-02	1.927e-01	9	Mapk12, Nfyb, Coro1a, H2-DMb1, Nfkb1, Crebbp, Mrc2, Mapk11, C3
mmu04510	Focal adhesion	10/191	203/7510	3.780e-02	1.943e-01	10	Lama4, Rap1a, Spp1, Map2k1, Itga6, Crkl, Ccnd1, Shc2, Tnn, Col6a2
mmu04621	NOD-like receptor signaling pathway	4/191	59/7510	3.888e-02	1.953e-01	4	Mapk12, Nfkb1, Mapk11, Hsp90b1
mmu04370	VEGF signaling pathway	4/191	60/7510	4.142e-02	2.034e-01	4	Mapk12, Map2k1, Shc2, Mapk11
mmu04730	Long-term depression	4/191	60/7510	4.142e-02	2.034e-01	4	Map2k1, Prkg2, Gnao1, Cacna1a
mmu04390	Hippo signaling pathway	8/191	154/7510	4.143e-02	1.948e-01	8	Bmpr1a, Tcf7, Dlg1, Prkci, Ccnd1, Wnt6, Bmp2, Smad3
mmu04151	PI3K-Akt signaling pathway	15/191	345/7510	4.242e-02	1.953e-01	15	Lama4, Spp1, Map2k1, Itga6, Il3ra, Ghr, Ccnd1, Osmr, Nfkb1, Gng8, Tnn, Fgfr2, Col6a2, Cdk6, Hsp90b1
mmu04512	ECM-receptor interaction	5/191	83/7510	4.412e-02	1.990e-01	5	Lama4, Spp1, Itga6, Tnn, Col6a2
mmu05210	Colorectal cancer	4/191	64/7510	5.264e-02	2.327e-01	4	Map2k1, Tcf7, Ccnd1, Smad3
mmu04630	Jak-STAT signaling pathway	8/191	161/7510	5.282e-02	2.289e-01	8	Il3ra, Ptpn6, Ghr, Fhl1, Ccnd1, Osmr, Stam, Crebbp
mmu04012	ErbB signaling pathway	5/191	87/7510	5.374e-02	2.284e-01	5	Map2k1, Crkl, Map2k7, Shc2, Ereg
mmu00340	Histidine metabolism	2/191	25/7510	5.481e-02	2.285e-01	2	Cndp2, Aldh3a1
mmu05214	Glioma	4/191	65/7510	5.571e-02	2.280e-01	4	Map2k1, Ccnd1, Shc2, Cdk6
mmu04912	GnRH signaling pathway	5/191	88/7510	5.634e-02	2.264e-01	5	Mapk12, Map2k1, Map2k7, Ptk2b, Mapk11
mmu04664	Fc epsilon RI signaling pathway	4/191	66/7510	5.890e-02	2.324e-01	4	Mapk12, Map2k1, Map2k7, Mapk11
mmu04720	Long-term potentiation	4/191	66/7510	5.890e-02	2.324e-01	4	Rap1a, Map2k1, Crebbp, Rps6ka2
mmu04114	Oocyte meiosis	6/191	115/7510	6.337e-02	2.415e-01	6	Mapk12, Map2k1, Smc3, Cul1, Slk, Rps6ka2
mmu02010	ABC transporters	3/191	46/7510	6.439e-02	2.412e-01	3	Abcb1b, Abca2, Abcc5
mmu04120	Ubiquitin mediated proteolysis	7/191	141/7510	6.470e-02	2.383e-01	7	Herc3, Herc4, Cul1, Ube4a, Birc6, Cul4b, Wwp2
mmu05211	Renal cell carcinoma	4/191	68/7510	6.562e-02	2.377e-01	4	Rap1a, Map2k1, Crkl, Crebbp
mmu04910	Insulin signaling pathway	7/191	142/7510	6.697e-02	2.387e-01	7	Map2k1, Prkar2a, Crkl, Prkci, Shc2, Prkar1b, Pygl
mmu00512	Mucin type O-Glycan biosynthesis	2/191	28/7510	7.279e-02	2.553e-01	2	Galnt1, Galnt18
mmu05166	HTLV-I infection	12/191	283/7510	7.300e-02	2.521e-01	12	Nfyb, Msx2, Dlg1, Ccnd1, Atf1, Vcam1, H2-DMb1, Nfkb1, Crebbp, Wnt6, Nfatc4, Smad3
mmu05202	Transcriptional misregulation in cancer	8/191	176/7510	8.426e-02	2.865e-01	8	Nupr1, Mlf1, Traf1, Atf1, Nfkb1, Jup, Hmga2, Plat

mmu05133	Pertussis	4/191	73/7510	8.441e-02	2.826e-01	4	Mapk12, Nfkb1, Mapk11, C3
mmu04110	Cell cycle	6/191	124/7510	8.841e-02	2.916e-01	6	Ccnd1, Crebbp, Smc3, Cul1, Cdk6, Smad3
mmu05412	Arrhythmogenic right ventricular cardiomyopathy (ARVC)	4/191	74/7510	8.851e-02	2.877e-01	4	Itga6, Tcf7, Jup, Gja1
mmu04520	Adherens junction	4/191	74/7510	8.851e-02	2.877e-01	4	Tcf7, Ptpn6, Crebbp, Smad3
mmu04145	Phagosome	8/191	178/7510	8.922e-02	2.817e-01	8	Coro1a, Atp6v0e2, Ncf4, Cyba, H2-DMb1, Tubb3, Mrc2, C3
mmu05213	Endometrial cancer	3/191	52/7510	9.337e-02	2.906e-01	3	Map2k1, Tcf7, Ccnd1
mmu04723	Retrograde endocannabinoid signaling	5/191	102/7510	1.016e-01	3.119e-01	5	Mapk12, Gnao1, Cacna1a, Gng8, Mapk11
mmu05168	Herpes simplex infection	9/191	212/7510	1.044e-01	3.161e-01	9	Oas3, Usp7, Traf1, H2-DMb1, Fas, Nfkb1, Crebbp, Cul1, C3
mmu04015	Rap1 signaling pathway	9/191	215/7510	1.124e-01	3.357e-01	9	Mapk12, Rap1a, Map2k1, Rap1, gap, Crkl, Prkci, Gnao1, Fgfr2, Mapk11
mmu05223	Non-small cell lung cancer	3/191	56/7510	1.161e-01	3.421e-01	3	Map2k1, Ccnd1, Cdk6
mmu05321	Inflammatory bowel disease (IBD)	3/191	58/7510	1.284e-01	3.734e-01	3	H2-DMb1, Nfkb1, Smad3
mmu04666	Fc gamma R-mediated phagocytosis	4/191	86/7510	1.469e-01	4.216e-01	4	Map2k1, Marcks11, Marcks, Crkl
mmu04540	Gap junction	4/191	86/7510	1.469e-01	4.216e-01	4	Map2k1, Prkg2, Tubb3, Gja1
mmu04024	cAMP signaling pathway	8/191	198/7510	1.496e-01	4.185e-01	8	Pde4d, Rap1a, Map2k1, Ptch1, Sox9, Gli1, Nfkb1, Crebbp
mmu00350	Tyrosine metabolism	2/191	38/7510	1.512e-01	4.177e-01	2	Aldh3a1, Fah
mmu04610	Complement and coagulation cascades	4/191	87/7510	1.525e-01	4.161e-01	4	Bdkrb1, Pros1, Plat, C3
mmu04914	Progesterone-mediated oocyte maturation	4/191	89/7510	1.641e-01	4.423e-01	4	Mapk12, Map2k1, Mapk11, Rps6ka2
mmu04727	GABAergic synapse	4/191	89/7510	1.641e-01	4.423e-01	4	Glul, Gnao1, Cacna1a, Gng8
mmu05203	Viral carcinogenesis	9/191	232/7510	1.648e-01	4.336e-01	9	H2bc11, Usp7, Dlg1, Ccnd1, Traf1, Nfkb1, Crebbp, Cdk6, C3
mmu04650	Natural killer cell mediated cytotoxicity	5/191	117/7510	1.692e-01	4.399e-01	5	Map2k1, Ptpn6, Shc2, Fas, Ptk2b
mmu04623	Cytosolic DNA-sensing pathway	3/191	64/7510	1.694e-01	4.353e-01	3	Cxcl10, Nfkb1, Ripk1
mmu05219	Bladder cancer	2/191	41/7510	1.798e-01	4.567e-01	2	Map2k1, Ccnd1
mmu05032	Morphine addiction	4/191	93/7510	1.886e-01	4.736e-01	4	Pde4d, Gnao1, Cacna1a, Gng8
mmu04071	Sphingolipid signaling pathway	5/191	122/7510	1.961e-01	4.869e-01	5	Mapk12, Sgms2, Map2k1, Nfkb1, Mapk11
mmu04115	p53 signaling pathway	3/191	68/7510	1.998e-01	4.906e-01	3	Ccnd1, Fas, Cdk6
mmu00562	Inositol phosphate metabolism	3/191	70/7510	2.159e-01	5.243e-01	3	Synj1, Isyna1, Ocr1
mmu04713	Circadian entrainment	4/191	98/7510	2.217e-01	5.326e-01	4	Prkg2, Cacna1g, Gnao1, Gng8

mmu04915	Estrogen signaling pathway	4/191	98/7510	2.217e-01	5.326e-01	4	Map2k1, Shc2, Gnao1, Hsp90b1
mmu05169	Epstein-Barr virus infection	8/191	217/7510	2.255e-01	5.302e-01	8	Mapk12, Usp7, Traf1, Map2k7, Nfkb1, Crebbp, Ripk1, Mapk11
mmu04810	Regulation of actin cytoskeleton	8/191	217/7510	2.255e-01	5.302e-01	8	Diaph3, Map2k1, Itga6, Ezr, Bdkrb1, Crkl, Rdx, Fgfr2
mmu05218	Melanoma	3/191	72/7510	2.325e-01	5.352e-01	3	Map2k1, Ccnd1, Cdk6
mmu04662	B cell receptor signaling pathway	3/191	72/7510	2.325e-01	5.352e-01	3	Map2k1, Ptpn6, Nfkb1
mmu04064	NF-kappa B signaling pathway	4/191	100/7510	2.356e-01	5.313e-01	4	Traf1, Vcam1, Nfkb1, Ripk1
mmu04144	Endocytosis	10/191	282/7510	2.360e-01	5.268e-01	10	Epn3, Capza1, Acap2, Prkci, Mvb12b, Stam, Igf2r, Pcd61p, Fgfr2, Smad3
mmu00600	Sphingolipid metabolism	2/191	48/7510	2.540e-01	5.613e-01	2	Sgms2, Acer3
mmu04728	Dopaminergic synapse	5/191	132/7510	2.561e-01	5.604e-01	5	Mapk12, Gnao1, Cacna1a, Gng8, Mapk11
mmu04726	Serotonergic synapse	5/191	133/7510	2.625e-01	5.687e-01	5	Map2k1, Ptgs1, Gnao1, Cacna1a, Gng8
mmu00520	Amino sugar and nucleotide sugar metabolism	2/191	49/7510	2.654e-01	5.695e-01	2	Uxs1, Renbp
mmu00330	Arginine and proline metabolism	2/191	49/7510	2.654e-01	5.695e-01	2	Cndp2, P4ha3
mmu04514	Cell adhesion molecules (CAMs)	6/191	164/7510	2.679e-01	5.639e-01	6	Neo1, Itga6, Sdc3, Vcam1, Tigit H2-DMb1
mmu05150	Staphylococcus aureus infection	2/191	50/7510	2.769e-01	5.773e-01	2	H2-DMb1, C3
mmu04930	Type II diabetes mellitus	2/191	50/7510	2.769e-01	5.773e-01	2	Cacna1g Cacna1a
mmu01230	Biosynthesis of amino acids	3/191	78/7510	2.855e-01	5.842e-01	3	Glul, Gpt, Pcx
mmu05132	Salmonella infection	3/191	78/7510	2.855e-01	5.842e-01	3	Mapk12, Nfkb1, Mapk11
mmu05162	Measles	5/191	137/7510	2.890e-01	5.806e-01	5	Oas3, Ccnd1, Fas, Nfkb1, Cdk6
mmu05160	Hepatitis C	5/191	137/7510	2.890e-01	5.806e-01	5	Mapk12, Oas3, Nfkb1, Ripk1, Mapk11
mmu05014	Amyotrophic lateral sclerosis (ALS)	2/191	52/7510	3.005e-01	5.930e-01	2	Mapk12, Mapk11
mmu04060	Cytokine-cytokine receptor interaction	9/191	265/7510	3.021e-01	5.908e-01	9	Bmpr1a, Il3ra, Ghr, Ccl20, Cxcl10, Osmr, Fas, Bmp2, Ppbp
mmu04066	HIF-1 signaling pathway	4/191	110/7510	3.112e-01	6.033e-01	4	Edn1, Map2k1, Nfkb1, Crebbp
mmu05323	Rheumatoid arthritis	3/191	82/7510	3.232e-01	6.211e-01	3	Atp6v0e2, Ccl20, H2-DMb1
mmu00500	Starch and sucrose metabolism	2/191	54/7510	3.247e-01	6.186e-01	2	Uxs1, Pygl
mmu05416	Viral myocarditis	3/191	83/7510	3.329e-01	6.288e-01	3	Eif4g2, Ccnd1, H2-DMb1
mmu04725	Cholinergic synapse	4/191	113/7510	3.355e-01	6.284e-01	4	Map2k1, Gnao1, Cacna1a, Gng8
mmu05410	Hypertrophic cardiomyopathy (HCM)	3/191	84/7510	3.427e-01	6.364e-01	3	Itga6, Tnnt2, Tpm1,
mmu04724	Glutamatergic synapse	4/191	115/7510	3.522e-01	6.486e-01	4	Glul, Gnao1, Cacna1a, Gng8

mmu04923	Regulation of lipolysis in adipocytes	2/191	57/7510	3.620e-01	6.612e-01	2	Prkg2, Ptgs1
mmu04919	Thyroid hormone signaling pathway	4/191	117/7510	3.691e-01	6.686e-01	4	Map2k1, Ccnd1, Crebbp, Rcan2
mmu05134	Legionellosis	2/191	58/7510	3.747e-01	6.732e-01	2	Nfkb1, C3
mmu05414	Dilated cardiomyopathy	3/191	88/7510	3.828e-01	6.822e-01	3	Itga6, Tnnt2, Tpm1
mmu05330	Allograft rejection	2/191	59/7510	3.875e-01	6.851e-01	2	H2-DMb1, Fas
mmu04974	Protein digestion and absorption	3/191	90/7510	4.034e-01	7.076e-01	3	Col3a1, Col5a3, Col6a2
mmu04721	Synaptic vesicle cycle	2/191	61/7510	4.134e-01	7.194e-01	2	Atp6v0e2, Cacna1a
mmu05332	Graft-versus-host disease	2/191	61/7510	4.134e-01	7.194e-01	2	H2-DMb1, Fas
mmu04142	Lysosome	4/191	124/7510	4.306e-01	7.377e-01	4	Abca2 Slc11a1, Igf2r, Ids
mmu00980	Metabolism of xenobiotics by cytochrome P450	2/191	65/7510	4.662e-01	7.925e-01	2	Cbr1, Aldh3a1
mmu04014	Ras signaling pathway	7/191	229/7510	4.771e-01	8.049e-01	7	Rap1a, Map2k1, Shoc2 Shc2, Nfkb1, Gng8, Fgfr2
mmu04940	Type I diabetes mellitus	2/191	66/7510	4.796e-01	8.030e-01	2	H2-DMb1, Fas
mmu05230	Central carbon metabolism in cancer	2/191	66/7510	4.796e-01	8.030e-01	2	Map2k1, Fgfr2
mmu04141	Protein processing in endoplasmic reticulum	5/191	169/7510	5.360e-01	8.840e-01	5	Hsph1, Map2k7, Dnajc3, Cul1, Hsp90b1
mmu04924	Renin secretion	2/191	71/7510	5.474e-01	8.961e-01	2	Prkg2, Agt
mmu04920	Adipocytokine signaling pathway	2/191	73/7510	5.747e-01	9.339e-01	2	Acs14, Nfkb1
mmu04360	Axon guidance	5/191	175/7510	5.873e-01	9.474e-01	5	Ptch1, Slit3, Nfatc4 Sema3b, Ephb6
mmu05320	Autoimmune thyroid disease	2/191	74/7510	5.885e-01	9.425e-01	2	H2-DMb1, Fas
mmu05146	Amoebiasis	3/191	108/7510	5.996e-01	9.533e-01	3	Lama4, Col3a1, Nfkb1
mmu05322	Systemic lupus erythematosus	4/191	144/7510	6.196e-01	9.781e-01	4	H2bc11, Ssb H2-DMb1, C3
mmu04931	Insulin resistance	3/191	111/7510	6.335e-01	9.929e-01	3	Nfkb1, Pygl, Rps6ka2
mmu05100	Bacterial invasion of epithelial cells	2/191	78/7510	6.435e-01	1	2	Crkl, Shc2
mmu04261	Adrenergic signaling in cardiomyocytes	4/191	149/7510	6.686e-01	1	4	Mapk12, Tnnt2, Mapk11, Tpm1
mmu05310	Asthma	1/191	23/7510	1	1	1	H2-DMb1
mmu00190	Oxidative phosphorylation	1/191	139/7510	1	1	1	Atp6v0e2
mmu03420	Nucleotide excision repair	1/191	44/7510	1	1	1	Cul4b
mmu04740	Olfactory transduction	1/191	1082/7510	1	1	1	Prkg2
mmu03013	RNA transport	1/191	169/7510	1	1	1	Eif4g2

mmu03050	Proteasome	1/191	45/7510	1	1	1	Psmb9
mmu04211	Longevity regulating pathway - mammal	1/191	96/7510	1	1	1	Nfkb1
mmu04978	Mineral absorption	1/191	45/7510	1	1	1	Slc11a1
mmu00982	Drug metabolism - cytochrome P450	1/191	67/7510	1	1	1	Aldh3a1
mmu04614	Renin-angiotensin system	1/191	35/7510	1	1	1	Agt
mmu00130	Ubiquinone and other terpenoid-quinone biosynthesis	1/191	11/7510	1	1	1	Nqo1
mmu04672	Intestinal immune network for IgA production	1/191	41/7510	1	1	1	H2-DMb1
mmu05020	Prion diseases	1/191	34/7510	1	1	1	Map2k1
mmu04918	Thyroid hormone synthesis	1/191	71/7510	1	1	1	Hsp90b1
mmu00900	Terpenoid backbone biosynthesis	1/191	22/7510	1	1	1	Mvd
mmu00532	Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate	1/191	20/7510	1	1	1	Chpf2
mmu00360	Phenylalanine metabolism	1/191	22/7510	1	1	1	Aldh3a1
mmu05033	Nicotine addiction	1/191	40/7510	1	1	1	Cacna1a
mmu00601	Glycosphingolipid biosynthesis - lacto and neolacto series	1/191	25/7510	1	1	1	Gcnt2
mmu04921	Oxytocin signaling pathway	4/191	158/7510	1	1	4	Map2k1, Ccnd1, Gnao1, Nfatc4
mmu00640	Propanoate metabolism	1/191	31/7510	1	1	1	Mlycd
mmu00620	Pyruvate metabolism	1/191	39/7510	1	1	1	Pcx
mmu04977	Vitamin digestion and absorption	1/191	24/7510	1	1	1	Tcn2
mmu04320	Dorso-ventral axis formation	1/191	25/7510	1	1	1	Map2k1
mmu01212	Fatty acid metabolism	1/191	51/7510	1	1	1	Acsl4
mmu04971	Gastric acid secretion	1/191	73/7510	1	1	1	Ezr
mmu05016	Huntington's disease	1/191	196/7510	1	1	1	Crebbp
mmu00630	Glyoxylate and dicarboxylate metabolism	1/191	30/7510	1	1	1	Glul
mmu04966	Collecting duct acid secretion	1/191	27/7510	1	1	1	Atp6v0e2
mmu05144	Malaria	1/191	50/7510	1	1	1	Vcam1

mmu04742	Taste transduction	1/191	87/7510	1	1	1	Cacna1a
mmu00510	N-Glycan biosynthesis	1/191	49/7510	1	1	1	Man2a1
mmu00830	Retinol metabolism	1/191	89/7510	1	1	1	Rdh10
mmu04330	Notch signaling pathway	1/191	49/7510	1	1	1	Crebbp
mmu04972	Pancreatic secretion	1/191	101/7510	1	1	1	Rap1a
mmu00565	Ether lipid metabolism	1/191	43/7510	1	1	1	Selenoi
mmu04130	SNARE interactions in vesicular transport	1/191	33/7510	1	1	1	Snap23
mmu00020	Citrate cycle (TCA cycle)	1/191	32/7510	1	1	1	Pcx
mmu00010	Glycolysis / Gluconeogenesis	1/191	66/7510	1	1	1	Aldh3a1
mmu00260	Glycine, serine and threonine metabolism	1/191	41/7510	1	1	1	Sardh
mmu00910	Nitrogen metabolism	1/191	17/7510	1	1	1	Glul
mmu04970	Salivary secretion	1/191	78/7510	1	1	1	Prkg2
mmu01210	2-Oxocarboxylic acid metabolism	1/191	19/7510	1	1	1	Gpt
mmu05030	Cocaine addiction	1/191	49/7510	1	1	1	Nfkb1
mmu00061	Fatty acid biosynthesis	1/191	14/7510	1	1	1	Acsl4
mmu04150	mTOR signaling pathway	1/191	62/7510	1	1	1	Rps6ka2
mmu00511	Other glycan degradation	1/191	18/7510	1	1	1	Engase
mmu04976	Bile secretion	1/191	71/7510	1	1	1	Abcb1b
mmu00071	Fatty acid degradation	1/191	49/7510	1	1	1	Acsl4
mmu04710	Circadian rhythm	1/191	31/7510	1	1	1	Cul1
mmu04260	Cardiac muscle contraction	2/191	80/7510	1	1	2	Tnnt2, Tmp1
mmu03018	RNA degradation	2/191	80/7510	1	1	2	Cnot1, Ddx6
mmu05034	Alcoholism	5/191	202/7510	1	1	5	H2bc11, Map2k1, Shc2, Gnao1, Gng8
mmu03320	PPAR signaling pathway	2/191	82/7510	1	1	2	Acsl4, Fabp5
mmu04146	Peroxisome	2/191	83/7510	1	1	2	Acsl4, Mlycd
mmu04750	Inflammatory mediator regulation of TRP channels	3/191	126/7510	1	1	3	Mapk12, Bdkrb1, Mapk11
mmu04640	Hematopoietic cell lineage	2/191	85/7510	1	1	2	Itga6, Il3ra

mmu01100	Metabolic pathways	30/191	1286/7510	1	1	30	Glul, Chpf2, Sgms2, Cndp2, Selenoi, Sardh, Cbr1, Atp6v0e2, Hpse, Acls4, Uxs1, Rdh10, Synj1, Mlycd, Gent2, Gpt, Pcx, P4ha3, Aldh3a1, Galnt1, Adssl1, Ptgs1, Man2a1, Isyna1, Ocr1, Ids, Galnt18, Fah, Pygl, Mvd
mmu04925	Aldosterone synthesis and secretion	2/191	86/7510	1	1	2	Cacna1g, Atf1
mmu04612	Antigen processing and presentation	2/191	86/7510	1	1	2	Nfyb, H2-DMb1
mmu00590	Arachidonic acid metabolism	2/191	89/7510	1	1	2	Cbr1, Ptgs1
mmu04020	Calcium signaling pathway	4/191	180/7510	1	1	4	Bdkrb1, Cacna1g, Ptk2b, Cacna1a
mmu00564	Glycerophospholipid metabolism	2/191	92/7510	1	1	2	Gpd1, Selenoi
mmu05204	Chemical carcinogenesis	2/191	93/7510	1	1	2	Cbr1, Aldh3a1
mmu04072	Phospholipase D signaling pathway	3/191	143/7510	1	1	3	Map2k1, Shc2, Ptk2b
mmu04070	Phosphatidylinositol signaling system	2/191	96/7510	1	1	2	Synj1, Ocr1
mmu05231	Choline metabolism in cancer	2/191	100/7510	1	1	2	Map2k1, Slc22a4
mmu04922	Glucagon signaling pathway	2/191	101/7510	1	1	2	Crebbp, Pygl
mmu04022	cGMP-PKG signaling pathway	3/191	172/7510	1	1	3	Map2k1, Prkg2, Nfatc4
mmu01200	Carbon metabolism	2/191	116/7510	1	1	2	Gpt, Pcx
mmu05010	Alzheimer's disease	3/191	177/7510	1	1	3	Bace1, Adam10, Fas
mmu00230	Purine metabolism	3/191	178/7510	1	1	3	Pde4d, Adssl1, Gmpr
mmu04270	Vascular smooth muscle contraction	2/191	127/7510	1	1	2	Map2k1, Acta2
mmu04152	AMPK signaling pathway	2/191	126/7510	1	1	2	Mlycd, Cend1
mmu03040	Spliceosome	2/191	133/7510	1	1	2	Cdc40, Hnrnpa3
mmu04530	Tight junction	2/191	140/7510	1	1	2	Prkci, Mpdz
mmu04932	Non-alcoholic fatty liver disease (NAFLD)	2/191	157/7510	1	1	2	Fas, Nfkb1
mmu04080	Neuroactive ligand-receptor interaction	2/191	285/7510	1	1	2	Bdkrb1, Ghr

KEGG pathway enrichment analysis with DEGs was performed by clusterProfiler. The details of pathway enrichment terms including PathwayID, Description, GeneRatio (the ratio of gene enrichment), BgRatio (background gene ratio), P value, q-value, Count, Genes and Enrich Factor were listed in Table S3, sorted by inverted order with P value.