

Supplemental Table 5 Significant pathways for up-regulated and down-regulated genes

	Pathway	Gene count	Background number	FDR	Genes
Up-regulated	Neuroactive ligand-receptor interaction	62	338	1.24E-23	PTH1R PTGFR GRIK3 GHR GRIK4 GRIA1 NTSR1 PRSS1 ADCYAP1 EDNRA GABBR2 UTS2R CHRNA2 P2RX6 CNR1 CNR2 S1PR3 CHRM2 TAC3 PTGER1 ADRA2C GRIN2A VIPR2 CHRNA4 HTR2A PENK CHRM4 GRID1 OXT PTGER3 CHRM5 SSTR2 CHRM3 GLRB LEPR SCTR GRIK2 CHRNA3 GRPR CTSG NPW TACR1 GPR156 ADRA1A NMUR1 ADRA1B ADRA1D SST AVPR2 NPY1R DRD2 GRIK5 DRD1 VIP POMC ADRB3 OXTR GABRE LPAR3 AGTR1 NTS TACR2
	Calcium signaling pathway	47	193	2.15E-22	PTGFR NTSR1 RYR3 EDNRA PTGER3 P2RX6 CACNA1H CASQ1 CACNA1E CASQ2 RYR1 CACNA1A PDE1A CACNA1C PTGER1 CACNA1G GRIN2A HTR2A TACR1 SLC8A2 PHKG1 ERBB4 CHRM5 CHRM3 CAMK2A CAMK2B MYLK3 GRPR ATP2B2 ATP2B4 HRC ADRA1A PDE1B ADRA1B ADRA1D ADCY2 MYLK DRD1 PDE1C TACR2 ADRB3 OXTR GNAL PLN AGTR1 CACNA1B CHRM2
	cAMP signaling pathway	42	214	4.36E-17	FXYD2 FXYD1 GRIA1 AKT3 MAPK10 ADCYAP1 EDNRA GABBR2 GNAI1 CACNA1C PDE3A PTGER3 GLI3 SSTR2 VIPR2 GPR81 MYL9 NPR1 OXT ATP1B2 CHRM2 CAMK2B CAMK2A CNGA3 POMC ATP2B2 ATP2B4 ADCY5 ADCY2 SST NPY1R DRD2 HCN4 DRD1 CREB3L3 VIP GRIN2A ATP1A2 OXTR PLN GLI1 HHIP
	Adrenergic signaling in cardiomyocytes	34	149	1.46E-15	SCN7A FXYD2 ACTC1 PPP2R3A AKT3 GNAI1 PPP1R1A CACNA2D1 CACNB2 CACNA1C TPM2 TPM1 SCN4B ATP1B2 CAMK2A CAMK2B PPP2R2C CACNA2D2 CACNA2D3 ATP2B2 ATP2B4 ADRA1A ADCY5 ADRA1B ADRA1D ADCY2 SLC8A2 CREB3L3 SCN1B ATP1A2 PLN AGTR1 SCN5A CACNG4
	cGMP-PKG signaling pathway	35	167	3.64E-15	FXYD2 AKT3 EDNRA NFATC4 KCNMB1 GNAI1 CACNA1C PDE3A KCNMA1 ADRA2C GUCY1A3 PRKG1 MYL9 NPR1 MRV1 ATP1B2 MYLK3 KCNMB2 SLC8A2 ATP2B2 ATP2B4 ADRA1A ADCY5 ADRA1B ADRA1D ADCY2 KCNJ8 MYLK PDE2A CREB3L3 ADRB3 ATP1A2 GUCY1B3 PLN AGTR1
	Cell adhesion molecules (CAMs)	33	146	3.64E-15	ITGA8 ITGA9 CLDN10 CLDN11 CLDN19 HLA-G CDH4 CNTNAP1 CNTN1 L1CAM NCAM1 NTNG1 NLGN1 IGSF11 CDH2 CLDN5 CLDN6 CADM1 NLGN3 JAM2 JAM3 NLGN4X NEGR1 NFASC CNTN2 LRRC4C LRRC4B SELP NRXN3 NRXN2 NRXN1 CADM3 MPZ
	Axon guidance	36	181	4.26E-15	EFNB3 NTN3 NFATC4 EPHA3 EPHA7 SMO BMPR1B TRPC1 TRPC4 L1CAM BOC SEMA6C GNAI1 PLXNB3 NTNG1 DRP2 GDF7 SLIT3 SLIT2 SLIT1 MYL9 BMP7 EPHB6 CAMK2A CAMK2B CFL2 CXCL12 SEMA3A LRRC4C SEMA3E SEMA3D NTN1 ROBO2 PLXNA4 RGMA PAK3
	MAPK signaling	44	295	2.04E-	RASGRP2 IGF2 NGF TGFB3 HSPA2 TGFB2 PLA2G4C AKT3 MAPK10 NGFR FLG CACNA1H CACNA1A CACNA1B CACNA1C CACNA1

Down-regulated	pathway			14	E NTRK2 CACNA1G FGF19 DUSP9 FGF10 FIGF IGF1 PDGFD ERBB4 CACNA2D2 GCK FGF7 CACNA2D3 FGF5 CACNA2D1 FGF2 PTPN5 FGFR1 ANGPT1 RASGRF1 MAPK8IP1 KIT MAP3K12 MAPT CACNB2 FLNA FLNC CACNG4
	PI3K-Akt signaling pathway	48	354	2.43E-14	ITGA8 ITGA9 NGF CHAD PPP2R3A PRKAA2 ITGA7 ITGA10 AKT3 NGFR COL9A1 IGF2 FLG GHR THBS4 CCNE1 TNXB NTRK2 FGF19 RELN FGF10 MAGI2 FIGF LAMA1 LAMA2 IGF1 PDGFD ERBB4 COMP CHRM2 PPP2R2C COL9A3 COL4A6 COL4A5 COL4A4 COL4A3 TNC FGF7 FGF5 TNN FGF2 FGFR1 VTN ANGPT1 KIT CREB3L3 GNG4 LPAR3
	ECM-receptor interaction	25	86	9.12E-14	ITGA8 ITGA9 CHAD ITGA7 ITGA10 THBS4 TNXB RELN SV2A GP5 SV2B LAMA1 LAMA2 FRAS1 COMP COL9A3 COL9A1 COL4A6 COL4A5 COL4A4 COL4A3 TNC TNN VTN FREM2
	Cytokine-cytokine receptor interaction	12	294	2.53E-10	CXCL1 AMH CXCL3 IFNG CCL18 CCRL1 CXCL9 TNFSF9 FASLG CXCL11 CXCL10 TNFRSF6B
	Viral protein interaction with cytokine and cytokine receptor	7	100	1.73E-07	CXCL1 CXCL3 CXCL9 CCRL1 CCL18 CXCL11 CXCL10
	NOD-like receptor signaling pathway	8	178	2.26E-07	CXCL1 CXCL3 CASP5 CASP1 GBP1 GBP5 AIM2 GBP4
	Chemokine signaling pathway	8	190	2.77E-07	CXCL1 CXCL3 CXCL9 CCRL1 CCL18 JAK2 CXCL11 CXCL10
	Salmonella infection	5	83	2.86E-05	IFNG CXCL1 NOS2 CXCL3 CASP1
	Influenza A	6	167	3.51E-05	CASP1 IFNG NXF3 FASLG JAK2 CXCL10
	Amoebiasis	5	95	3.85E-05	IFNG CXCL1 NOS2 LAMA3 C8G
	Cytosolic DNA-sensing pathway	4	63	1.84E-04	CASP1 POLR3G AIM2 CXCL10

PD-L1 expression and PD-1 checkpoint pathway in cancer	4	89	5.99E- 04	IFNG CD274 JAK2 BATF2
IL-17 signaling pathway	4	93	6.36E- 04	IFNG CXCL10 CXCL3 CXCL1
