

Functional Annotation of CNVR in Debao Horse

Table S4 KEGG pathway analysis of DB

Category	Term	Count	PValue	Genes
KEGG_PA THWAY	ecb05150:Staphylococcus aureus infection	13	0.0016462 53	KRT10A、DEFA31L、DQB2、DEFA22、DEFA5L、DQA3、DQB1、CFH、DQA1、DRB、ITGB2、ECATH-3、DQA2
KEGG_PA THWAY	ecb04514:Cell adhesion molecules	17	0.0016479 25	F11R、MHCX1、CDH2、CNTN1、CDH5、DQB2、VTCN1、PTPRC、EQMCE1、ITGA8、DQA3、DQB1、ITGB8、DQA1、DRB、ITGB2、DQA2
KEGG_PA THWAY	ecb04612:Antigen processing and presentation	11	0.0024340 9	EQMCE1、MHCX1、KLRD1、Hsp70、DQA3、DQB1、CTSB、DQB2、DQA1、DRB、DQA2
KEGG_PA THWAY	ecb04024:cAMP signaling pathway	19	0.0033432 94	CAMK2D、EDN3、PDE3A、HTR1E、GLI3、GNAI2、CNGB3、NPY、SSTR1、HTR1A、SOX9、ADCYAP1、GCG、PTGER3、SST、MAP2K2、HTR1F、ROCK2、ROCK1
KEGG_PA THWAY	ecb04726:Serotonergic synapse	13	0.0035760 06	HTR1E、ALOX5、GNAI2、HTR7、HTR1A、CYP2C108、CYP4X1、HTR5A、GNAO1、PLA2G4A、HTR1F、GNG11、ALOX15B
KEGG_PA THWAY	ecb05416:Viral myocarditis	10	0.0046308 48	EQMCE1、MHCX1、DQA3、DQB1、DQB2、DQA1、DRB、ITGB2、CASP8、DQA2
KEGG_PA THWAY	ecb05145:Toxoplasmosis	12	0.0060654 7	MAP3K7、CCR5、GNAO1、DQA3、ALOX5、DQB1、GNAI2、DQB2、DQA1、DRB、CASP8、DQA2
KEGG_PA THWAY	ecb05323:Rheumatoid arthritis	11	0.0069746 85	CXCL6、ATP6V1H、DQA3、DQB1、DQB2、ACP5、CXCL8、DQA1、DRB、ITGB2、DQA2
KEGG_PA THWAY	ecb04080:Neuroactive ligand-receptor interaction	25	0.0147565 43	UCN3、HTR1E、NPY、OPRM1、GALR1、ADCYAP1、PTH2R、GCG、TACR3、PTGER3、HTR5A、GABRG1、SST、HTR1F、CYSLTR2、EDN3、NMBR、HTR7、SSTR1、HTR1A、GHR、QRFPR、GRID2、GABRR1、CHRM3
KEGG_PA	ecb04921:Oxygen	13	0.0161686	PRKAB2、CAMK2D、GNAI2、EGFR、

THWAY	tocin signaling pathway	08	MYLK3, RGS2, GNAO1, PLA2G4A, MAP2K2, ROCK2, CACNB2, ROCK1, TRPM2 SGMS1, NANP, CARNMT1, AHCYL2, ENO4, SELENBP1, PLOD2, ALOX5, MINPP1, POMK, B3GALT1, ADPGK, EHMT1, PLA2G4A, ATP6V1H, CYP3A96, TYRP1, CYP7A1, GALNT14, ST6GAL2, PLCD4, NDST4, ASRGL1, SI, ST6GALNAC4, KMT2C, MOCS1, CYP11B1, HYAL4, MGAT4C, LPCAT4, PIGB, HTR5A, TMEM189, GUCY2D, MYLK3, ALOX15B, CYP2B6, MAN1A2, B3GALNT1, BLVRA, ADK, ELOVL3, FAH, FBP2, GCNT1, FBP1, PLCZ1, CYP2B46, CNDP2, PIK3C3, HTR1A, PDE5A, CNDP1, ITGB2, SORD, MAT2B, IMPA1, NT5E, ACP5, ACADSB, SGPL1, ACO1, PDE3A, AK6, NAMPT, ENPP3, CXCL6, GNPDA2, C1GALT1, ABO, CYP2C108, SPTLC3, SPAM1, GSTA3, PIP5KL1, ND5, UXS1	
KEGG_PA THWAY	ecb01100:Metabolic pathways	78	0.0336406	81

Table S5 GO pathway analysis of DB

Category	Term	Count	PValue	Genes
GOTERM_BP_DIRECT	GO:0007268~chemical synaptic transmission	16	4.05E-04	HTR1E, SYT10, SNCA, HTR7, HTR1A, OR5T40, HTR5A, LRP8, GABRG1, LRP6, SV2C, SDCBP, HTR1F, CACNB2, GABRR1, CHRM3
GOTERM_BP_DIRECT	GO:1990830~cellular response to leukemia inhibitory factor	10	0.0058125 96	SPRY2, TEX14, PAX6, NUP35, NR5A2, SSTR1, MRPL15, TFRC, EEF1E1, PADI2
GOTERM_BP_DIRECT	GO:0043066~negative regulation of apoptotic process	19	0.0083762 92	GLI3, DAPK1, NUP35, PRAME, VTCN1, CITED2, EGFR, AMIGO2, GCG, RASA1, SPRY2, CDC73, TCL1A, PROP1, WNT7A, SMO, CAPN13, TFRC, ASCL1
GOTERM_BP_DIRECT	GO:0007156~homophilic	12	0.0091961 52	CDH2, CDH5, CDH12, FAT3, CDH19, KIRREL3, PCDH20, CDH11, PCDH7, PCDHAC2, CELSR3,

	cell adhesion via plasma membrane adhesion molecules GO:0010628~			PCDH10
GOTERM_BP _DIRECT	positive regulation of gene expression	20	0.0289531 68	YAP1, ZNF804A, CNTN1, CDH5, ETS1, NGF, SOX9, CITED2, SOX11, SPRY2, PIP, PAX6, WNT7A, FAM98A, ITGB8, SHH, ROCK2, CXCL8, SMO, ROCK1
GOTERM_CC _DIRECT	GO:0045202~ synapse	27	8.04E-05	HTR1E, SNCA, GNAI2, SLC16A1, AP3B1, TIAM2, OR5T40, HTR5A, CBLN2, GABRG1, LRP6, HTR1F, ACTBL2, CACNB2, VWC2, CYFIP1, SYT10, RIMS2, CAPRIN1, HTR7, HTR1A, CBLN4, LRP8, SDCBP, LY6E, GABRR1, CHRM3
GOTERM_CC _DIRECT	GO:0005887~ integral component of plasma membrane	46	0.0203340 15	OR56A1, SGMS1, SLC26A8, HTR1E, OR4E2, KLRD1, SYNDIG1, PCDH20, MERTK, OPRM1, PCDH7, GALR1, GYPA, SLC16A1, SLC39A12, OR5T40, HTR5A, GABRG1, HTR1F, CYSLTR2, SEMA6D, PCDH10, ADGRE1, SLC26A11, SLCO1B3, NMBR, TMPRSS11A, HTR7, SSTR1, ABCB5, HTR1A, CEMIP2, PROKR1, KIRREL3, GHR, QRFPR, TRPM1, PKD2L1, PCDHAC2, IYD, SLCO4C1, KCNK2, TFRC, TRPM2, GABRR1, CHRM3
GOTERM_CC _DIRECT	GO:0030425~ dendrite	16	0.0226365 45	HTR1E, KIF21B, GNAI2, HTR7, ZWINT, NGF, HTR1A, OR5T40, HTR5A, MARK2, STX3, GNAO1, FAT3, HTR1F, SMO, CHRM3
GOTERM_CC _DIRECT	GO:0031965~ nuclear membrane	11	0.0228810 59	MYO6, LYPLA1, MINDY3, CDH5, TMEM18, ALOX5, SDCBP, NUP35, RAP1GAP2, CUEDC2, THAP7
GOTERM_CC _DIRECT	GO:0005886~ plasma membrane	142	0.0252194 68	CCR5, CDH12, RAB4A, OPRM1, AMPH, XKR5, MAPKAP1, LRP6, MINDY3, NUP35, TCAF2, SHH, OR11H5, SULF2, SEMA6D, PCDH10, ARL4C, LYPLA1, SYT10, PREX1, HTR7, OR10Q2, SRPK1, COBL, CEMIP2, LRP8, PRAME, FAT3, SLC34A2, ARRDC1, OR6V1, LY6E, TNK2, GPD1L, ZP4, OR6X1, RHBDL2, MPP7, GSDMC, CTTN, FRMD8, FBP1, HJV, SOX11, PTH2R, TACR3, RASA1, CLEC12A, NIPA2, PTGER3, LY49B, STX3, GFRA2, SLC5A4, OR5C1, ENAH, LANCL2, ZNF804A, DAPK1, CYFIP1, WDPCP, CELSR3, GAS1, SPAM1, LINGO2, OR6C315, OR11A1, GHR, TFRC, TRPM2, OR5P95, VEPH1, OR4F14Q, OR10C1, F11R, STXBP6, ACVR2A, STEAP1, LAIR1, ATP23, ANO5, CDH19, DYNAP, ROCK2, ROCK1, PALS2, ADGRE1, VANGL1, CST3, OR4F80C, ENOX1, RGS2, MICALL2,

				<p>NEDD4, OR10V1, SDCBP, LMBRD1, CDH11, PARP14, PCDHAC2, OR11A1B, GRID2, GUCY2D, ALOX15B, ADK, CNTN1, PLCL1, PANX1, OR4C199, STXBP5, FTO, OR4P7, CSMD3, LY49F, OR2J3H, TCAF1, LY49E, NT5E, VLDLR, MAP3K7, CYP2B46, OR4F80, SLCO1B3, CAPN9, TAS1R2, DMBT1, ADGRA3, OR2W6, OR5J1, OR4F80B, KCNT2, TMEFF2, PKP2, OR2BD2, DUSP22, SLCO4C1, KCNK2, RPSA, SMO, RGS13, RAP1GAP2, STX17</p> <p>PRKAB2, TRIM45, SMAP1, ALOX5, RMDN1, TWIST2, SCAF8, AMPH, PPP1R14C, PRUNE2, MAPKAP1, GCG, PDE4DIP, CSRP1, ELP4, PRMT3, ACTBL2, PPFIA1, LYPLA1, TACC3, CARS1, SASH1, IRAK1BP1, PRAME, ASPM, SRPK1, MYLK3, TNFAIP3, VWA8, MOB1B, SKP1, ARRDC1, KLHL25, TNK2, ROPN1L, FBXO4, SNCA, MERTK, CXXC4, FBP1, ARHGEF11, TIAM2, EYA4, CASP8, NOVA1, PIK3C3, AGA, MAP2K2, CDIN1, ENAH, ZNF804A, CYFIP1, HTATIP2, SERPINB5, DAPK1, WDPCP, CAPRIN1, DICER1, CHD1, PLK2, PTPN22, CEBPB, UXS1, ATXN7L3B, ARHGAP28, KCNIP4, PADI4, CDH2, BATF, ACVR2A, MYO5B, URI1, PLA2G4A, RNF111, ROCK2, ROCK1, PADI2, CAMK2D, SHROOM3, UBR3, TBCA, ASRGL1, GLI3, TENT5A, TRIM68, RGS2, NEDD4, DOK5, SGK1, GARNL3, SDCBP, CDH11, ACTR1B, HSPB8, PARP14, CCNE1, PCDHAC2, ALOX15B, DEUP1, CYP2B6, MRTO4, RNF167, NAP1L4, BLVRA, TRIM21, CRACR2A, FBP2, TRIM26, STXBP5, ANXA10, CYP2B46, FTO, MARK2, SAMD5, POC5, ELP3, FAP221, LGALS3, SNTG1, CAPN13, YAP1, MAP3K7, ACO1, AK6, ASAP2, NAMPT, CAPN9, NR5A2, CLMN, GNPDA2, PADI3, CYP2C108, SCGB1A1, PTPN11, RBFOX2, PKP2, ANXA5, LRRCC1, DUSP22, FKBP1A, LRRC3, PER2, RAP1GAP2, PARP15</p>
GOTERM_CC _DIRECT	GO:0005737~ cytoplasm	144	0.0257213 83	<p>VLDLR, NR3C2, MERTK, ACVR2A, IL23R, NT5DC3, KCTD8, EGFR, LRP8, IL12RB2, GHR, GFRA2, PKD2L1</p> <p>KCNIP4, MAN1A2, CDH2, PADI4, CDH5, CDH12, CRACR2A, PCDH20, PCDH7, ANXA10, PLCZ1, MINDY3, PLA2G4A, CDH19, SHH, CAPN13, SULF2, PCDH10, PADI2, VLDLR, PLCD4, ADGRE1, SYT10, SPOCK3, CAPN9, CETN1, PADI3, CELSR3, CEMIP2, LRP8,</p>
GOTERM_CC _DIRECT	GO:0043235~ receptor complex	13	0.0329870 78	
GOTERM_M F_DIRECT	GO:0005509~ calcium ion binding	38	0.0096664 86	

ANXA5、FAT3、MATN1、CDH11、PKD2L1、
PCDHAC2、TRPM2、ALOX15B
