Supplemental Information for:

Preferential co-expression and colocalization of rDNA-contacting genes with lincRNAs suggest their involvement in shaping inter-chromosomal interactions with nucleoli

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Tables S1–S10

Figure S1

Table S1. Overlapping groups of rDNA-contacting gene in HEK293T cells are co-expressed with 124 different long non-coding RNAs.

Term	Overlap	Adjusted P-value	Genes
FRMPD3-AS1	55/100	2.6232750318341253E-7	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;FMN2;GRIK2;TRIM9;OPHN1;LRRTM3;DENND5A;EPHB1;PCDHGA8;PCDHGA7;GRID2;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3;PCDHGA2;TCF12;PCDHGA1;GPR75;PCDHGA9;CDH10;PCDHGB1;ASTN1;ADCYAP1R1;LUZP2;NRXN1;ADCY2;KCNA6;NDRG2;MAP2;LRIG1;NCAM1;KCNN3;LRRC4C;GRIA3;GPR158;GRIA4;CLASP2;NTRK2;CADM2;NTRK3;LSAMP;QKI;GNAO1;PCDHGA10;PCDHGA11;PCDHGA12;APC*
CHL1-AS1	54/100	4.914290492803087E-7	*SEMA5A;PCDHGB6;PCDHGB4;PCDHGB3;DOCK7;PCDHGB2;SLC35F1;FMN1;EDNRB;UBL3;CHL1;HMCN1;ANKS1A;DIP2C;STK32A;SOX5;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;TMEM178B;PCDHGA4;PCDHGA3;PCDHGA2;KAZN;MITF;ANK2;ACTR8;PCDHGA9;NRG3;TBC1D5;PCDHGB1;CREB5;MTPN;NLGN1;AKAP6;NKAIN3;ZMAT3;ZC3H13;FARP2;ARNT2;MYEF2;SORT1;S100B;CORO2B;IGSF11;PCDHGA11;NELL1;PCDHGA12;FMNL2;VPS41;NAPEPLD;*

			CNIH3;SLC24A5
LINC00945	52/100	3.0650094424632597E-6	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;SLC35F1;DOCK10;TRIM9;LRRTM3;BAALC;DENND5A;SOX8;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;TCF12;PCDHGA9;BCAN;PCDHGB1;CRB1;AKAP6;MAP2;TSPAN7;FYN;NCAM1;DISC1;GRIA3;GRIA4;CLASP2;ARNT2;WSCD1;ST8SIA1;LSAMP;LHFPL3;CORO2B;QKI;PCDHGA10;IGSF11;PCDHGA11;CCDC88A;PCDHGA12;NOVA1;APBA2
SLC8A1-AS1	52/100	3.0650094424632597E-6	GPR21;STON1;ZBTB20;FRY;SLC8A1;MYLK;SYNE1;KIAA1109;PGM5;WDR7;SBF2;TEAD1;CC2D2A;PRKG1;TNS1;MEF2A;EPM2A;NCOA1;ZNF483;TRPC4;PDE4D;STON1-GTF2A1L;EML1;KATNAL1;SETBP1;KCNMA1;WDFY3;PPP1R12B;ZNF510;CDKL1;SYNPO2;PRUNE2;PRICKLE2;CACNA1C;LPP;ATXN1;PLN;DPP8;FAM172A;CALD1;MYH11;FILIP1L;KIDINS220;NDE1;FOXN3;MYO9A;FER;NBEA;CCSER2;MSRB3;MRVI1;FERMT2
LINC00928	51/100	6.8049684634282214E-6	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;TRIM9;OPHN1;LRRTM3;SOX8;DENND5A;EPHB1;SCN1A;PCDHGA8;PCDHGA7;GRID2;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;KCND2;PCDHGA3;PCDHGA2;TCF12;PCDHGA1;PCDHGA9;BCAN;FCHSD2;CDH10;PCDHGB1;DSCAML1;CRB1;LUZP2;PCDH15;MAP2;NCAM1;KCNN3;GRIA3;GRIA4;CLASP2;CADM2;LSAMP;LHFPL3;QKI;PCDHGA10;ATAT1;PCDHGA11;PCDHGA12;NOVA1;APBA2
LINC01572	51/100	6.8049684634282214E-6	PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCDHGB2;GRIK4;GRIK2;TRIM9;LRRTM3;TNR;BAALC;DENND5A;SOX8;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3;PCDHGA2;TCF12;PCDHGA1;GPR75;SEZ6L;PCDHGA9;FCHSD2;CDH10;PCDHGB1;DSCAML1;ASTN1;SHC3;NRXN1;DRP2;MAP2;NCAM1;LRRC4C;CACNG2;GRIA3;GRIA4;CLASP2;CADM2;LHFPL3;QKI;PCDHGA10;ATAT1;CCDC88A;PCDHGA11;PCDHGA12;APC
ARHGEF7-IT1	50/100	1.4530475903009115E-5	DOCK4;MAML2;DENND5B;FAM13C;ITSN1;ZBTB20;KIAA1109;OPHN1;SACS;DENND5A;SBF2;SCAPER;TRIM23;NCOA1;KLF12;ZNF483;FBXW11;TCF12;DNM3;ARMCX4;MMP16;SETBP1;PEAK1;DOK6;RAPGEF2;WDFY3;PIK3C3;SIK2;ZNF510;CALCRL;CTTNBP2;RNF180;CRMP1;SNTG1;MAP2;NCAM1;MPDZ;CLASP2;KIDINS220;MYO9A;QKI;CCDC144NL;NBEA;APC;DCHS2;TTC3;ST7;FAT3;TCF4;CNTN3
PRICKLE2-AS1	50/100	1.4530475903009115E-5	SYNM;TGFB1I1;ITSN1;STON1;MPRIP;DIP2C;SBF2;TEAD1;PRKG1;TNS1;RBFOX2;AFAP1;ABCC9;STON1-GTF2A1L;EML1;KATNAL1;SETBP1;PALLD;PEAK1;KCNMA1;WDFY3;TTLL11;PPP1R12B;PDZRN3;VCL;RABGAP1;SYNPO2;LAMA4;PRUNE2;PRICKLE2;CACNA1C;LPP;TOR1AIP1;ATXN1;DPP8;CALD1;MYH11;FLNC;MPDZ;STAR

			D13;NEGR1;KIDINS220;NDE1;FOXN3;FER; APC;CCSER2;MSRB3;MRVI1;FERMT2
OPCML-IT1	50/100	1.4530475903009 115E-5	*PCDHGB7;PCDHGB6;MEGF11;PCDHGB4;PCDH GB3;PCDHGB2;GRIK3;GRIK4;SLC35F1;GRI K2;LRRTM3;TMEM108;TNR;SOX8;EPHB1;PC DHGA8;PCDHGA7;GRID2;PCDHGA6;PCDHGA5 ;DSCAM;PCDHGA4;PCDHGA3;PCDHGA2;TCF1 2;PCDHGA1;PCDHGA9;BCAN;PCDHGB1;DSCA ML1;CRB1;PCDH15;CRMP1;MAP2;FYN;NCAM 1;GRIA3;GRIA4;OPCML;CA10;CADM2;TMEM 132B;LSAMP;LHFPL3;PCDHGA10;ATAT1;PC DHGA11;PCDHGA12;NOVA1;APBA2*
LINC02283	49/100	3.3572564714047 73E-5	*PCDHGB7;PCDHGB6;PCDHGB4;MEGF11;PCDH GB3;PCDHGB2;GRIK4;GRIK2;TRIM9;LRRTM 3;TNR;SOX8;DENND5A;EPHB1;PCDHGA8;PC DHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;P CDHGA4;PCDHGA3;PCDHGA2;TCF12;PCDHGA 1;PCDHGA9;BCAN;CDH10;PCDHGB1;DSCAML 1;CRB1;PCDH15;CRMP1;MAP2;NCAM1;FYN; GRIA3;GRIA4;CLASP2;BTBD17;CADM2;LSA MP;LHFPL3;QKI;PCDHGA10;ATAT1;PCDHGA 11;PCDHGA12;NOVA1*
LINC02060	49/100	3.3572564714047 73E-5	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;GRIK4;FMN2;IQCJ- SCHIP1;TRIM9;DENND5A;PCDHGA8;PCDHGA 7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;PCD HGA3;PCDHGA2;PCDHGA1;PCDHGA9;BCAN;R FX4;CDH10;PCDHGB1;ADCYAP1R1;LUZP2;P CDH15;SLC1A3;ADCY2;NDRG2;SNN;MAP2;N CAM1;KCNN3;GRIA3;JAM2;CLASP2;BBS2;D TNA;CADM2;LSAMP;QKI;PCDHGA10;PCDHGA 11;PCDHGA12;APC;NOVA1;APBA2*
LINC02318	49/100	3.3572564714047 73E-5	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;GRIK4;GRIK2;FMN2;TRIM9; DPYSL2;PDE4B;BAALC;DENND5A;EPHB1;SH 3GL2;WLS;PCDHGA8;PCDHGA7;PCDHGA6;PC DHGA5;PCDHGA4;PCDHGA3;PCDHGA2;PCDHG A1;PCDHGA9;BCAN;FRMD5;RFX4;PCDHGB1; GRIA1;CRB1;CRMP1;LRIG1;NCAM1;FYN;LR RC4C;GRIA3;GPR158;JAM2;CLASP2;CADPS ;QKI;PCDHGA10;ATAT1;PCDHGA11;PCDHGA 12;NOVA1;APBA2*
LINC01602	48/100	5.9690718488796 89E-5	*CRB1;PCDHGB7;DGKB;FAM13C;PCDHGB4;PC DHGB2;GRIK4;GRIK2;DRP2;TRIM9;OPHN1; FAM184B;MAP2;FAM110B;PHACTR3;TNR;SO X8;FYN;CSMD3;SOX6;LRRC4C;CACNG2;EPH B1;GRIA3;GPR158;SCN1A;GRIA4;PCDHGA6 ;CA10;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3 ;TMEM132B;PCDHGA2;TCF12;PCDHGA1;LHF PL3;MYO16;PCDHGA10;PCDHGA11;PCDHGA1 2;FCHSD2;PCDHGB1;TOX;MDGA2;FGF12;DS CAML1*
LINC00689	48/100	5.9690718488796 89E-5	*CRB1;DGKB;FAM13C;CTTNBP2;MEGF11;LUZ P2;PCDH15;GRIK4;GRIK2;TMEM100;DRP2; TRIM9;OPHN1;MAP2;FAM110B;PHACTR3;LR IG1;TNR;GSG1L;SOX8;DENND5A;NCAM1;FY N;CSMD3;SOX6;RHBDL3;EPHB1;GRIA3;SCN 1A;GRIA4;CLASP2;GRID2;DSCAM;CADM2;T CF12;LSAMP;LHFPL3;QKI;MYO16;PCDHGA1*

			0;ATAT1;BCAN;PCDHGA12;FCHSD2;NOVA1;CDH10;FGF12;DSCAML1
LINC00391	48/100	5.9690718488796 89E-5	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;SLC1A3;GRIK4;ADCY2;FMN2;NDRG2;TRIM9;SNN;LRRTM3;MAP2;BAALC;DENND5A;NCAM1;GRIA3;JAM2;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LSAMP;GPR75;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;APC;RFX4;CDH10;PCDHGB1;APBA2;ASTN1
LINC02226	48/100	5.9690718488796 89E-5	PCDHGB7;NLGN1;KHDRBS3;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;SLC35F1;AKAP6;FMN2;TRIM9;EDNRB;UBL3;TSPAN7;BAALC;DENND5A;FYN;NCAM1;SOX6;CLASP2;PCDHGA8;PCDHGA7;ARNT2;PCDHGA6;PCDHGA5;MYEF2;PCDHGA4;ST8SIA1;PCDHGA3;PCDHGA2;MAGI2;PCDHGA1;LSAMP;CORO2B;QKI;PCDHGA9;IGSF11;PCDHGA10;BCAN;PCDHGA11;PCDHGA12;PTPRA;PCDHGB1;MDGA2;APBA2;ASTN1
LINC01415	48/100	5.9690718488796 89E-5	PCDHGB7;SHC3;PCDHGB6;PCDHGB4;PCDHGB3;NRXN1;PCDHGB2;GRIK4;CRMP1;GRIK2;TRIM9;LRRTM3;SNTG1;MAP2;BAALC;TNR;DENND5A;NCAM1;LRRC4C;CACNG2;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;TCF12;LSAMP;LHFPL3;SEZ6L;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;APC;CDH10;PCDHGB1;TCF4;ASTN1
NRXN2-AS1	48/100	5.9690718488796 89E-5	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;GRIK4;CRMP1;FMN2;GRIK2;TRIM9;LRRTM3;MAP2;BAALC;DENND5A;NCAM1;FYN;LRRC4C;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LSAMP;LHFPL3;QKI;PCDHGA9;PCDHGA10;GNAO1;ATAT1;BCAN;PCDHGA11;PCDHGA12;CDH10;PCDHGB1;APBA2;ASTN1
NKAIN3-IT1	48/100	5.9690718488796 89E-5	ADCYAP1R1;PCDHGB7;PCDHGB4;LUZP2;CTNND2;PCDHGB3;NRXN1;SLC1A3;GRIK4;ADCY2;FMN2;NDRG2;TRIM9;SNN;NKAIN3;OPHN1;DENND5A;NCAM1;KCNN3;GRIA3;JAM2;GRIA4;CLASP2;PCDHGA8;PCDHGA7;NTRK2;PCDHGA6;DTNA;PCDHGA5;KCND2;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;GPR75;QKI;GNAO1;PCDHGA11;APC;DAAM2;RFX4;CDH10;PCDHGB1;SLC25A53;APBA2;ASTN1
JAKMIP2-AS1	48/100	5.9690718488796 89E-5	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;GRIK4;CRMP1;FMN2;TRIM9;DPP6;LRRTM3;MAP2;TSPAN7;BAALC;DENND5A;NCAM1;LRRC4C;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;DTNA;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;GPR75;

			QKI;PCDHGA9;GNAO1;PCDHGA10;PCDHGA11;PCDHGA12;APC;RFX4;CDH10;PCDHGB1;APBA2;ASTN1
LINC01690	47/100	1.2153385460900866E-4	CRB1;ADCYAP1R1;PCDHGB7;PCDHGB6;PCDHGB4;LUZP2;CTNND2;PCDHGB3;PCDHGB2;PCDH15;GRIK4;NDRG2;TRIM9;OPHN1;LRRTM3;MAP2;DENND5A;SOX8;NCAM1;FYN;KCNN3;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;TCF12;LSAMP;QKI;PCDHGA9;PCDHGA10;BCAN;PCDHGA11;PCDHGA12;FCHSD2;CDH10;PCDHGB1;DSCAML1
LINC00461	47/100	1.2153385460900866E-4	CRB1;ADCYAP1R1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;SLC1A3;GRIK4;FMN2;TRIM9;SNN;LRRTM3;MAP2;BAALC;DENND5A;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;APC;RFX4;CDH10;PCDHGB1;APBA2;ASTN1
LINC02144	47/100	1.2153385460900866E-4	PCDHGB7;RTN1;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;SLC1A3;CRMP1;SLC35F1;FMN2;TRIM9;SNN;LRRTM3;MAP2;SNTG1;TSPAN7;BAALC;NCAM1;GRIA3;CLASP2;PCDHGA8;PCDHGA7;GRID2;PCDHGA6;DTNA;PCDHGA5;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;ATAT1;PCDHGA11;PCDHGA12;APC;NOVA1;CDH10;PCDHGB1;APBA2;ASTN1
CTNNA2-AS1	47/100	1.2153385460900866E-4	CRB1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;SLC1A3;GRIK4;FMN2;NPAS3;TRIM9;DPP6;SNN;LRRTM3;MAP2;TSPAN7;BAALC;DENND5A;NCAM1;CTNNA2;GRIA3;JAM2;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;APC;RFX4;CDH10;PCDHGB1;APBA2;ASTN1
TRAF3IP2-AS1	47/100	1.2153385460900866E-4	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;CRMP1;TRIM9;LRRTM3;MAP2;BAALC;DENND5A;FYN;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;TCF12;LSAMP;GPR75;ZDHHC17;QKI;PCDHGA9;PCDHGA10;ATAT1;BCAN;CCDC88A;PCDHGA11;PCDHGA12;FCHSD2;APC;CDH10;PCDHGB1;APBA2;ASB3;ASTN1
SLC6A1-AS1	47/100	1.2153385460900866E-4	CRB1;PCDHGB7;PCDHGB6;PCDHGB4;MEGF11;PCDHGB3;NRXN1;PCDHGB2;GRIK4;ABAT;GRIK2;NDRG2;TRIM9;LRRTM3;MAP2;TNR;DENND5A;SOX8;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;TCF12;LSAMP;GPR75;LHFP

			L3;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;APC;CDH10;PCDHGB1;DSCAML1;ASTN1
LRP4-AS1	47/100	1.2153385460900866E-4	PCDHGB7;SHC3;DOCK3;PCDHGB6;MEGF11;PCDHGB4;PCDHGB3;NRXN1;PCDHGB2;GRIK4;LRP4;GRIK2;TRIM9;LRRTM3;MAP2;TNR;SOX8;FYN;NCAM1;LRRC4C;CACNG2;GRIA3;GRIA4;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;TMEM132B;PCDHGA2;NTRK3;PCDHGA1;TCF12;GPR75;LHFPL3;PCDHGA9;PCDHGA10;BCAN;PCDHGA11;PCDHGA12;CDH10;PCDHGB1;DSCAML1;ASTN1
ADGRL3-AS1	47/100	1.2153385460900866E-4	CRB1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;CRMP1;TRIM9;LRRTM3;MAP2;TSPAN7;BAALC;DENND5A;SOX8;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;GNAO1;DNM3;ATAT1;BCAN;PCDHGA11;PCDHGA12;NOVA1;CDH10;PCDHGB1;APBA2;ASTN1
LINC02774	46/100	3.110362831089401E-4	PCDHGB7;SHC3;RTN1;PCDHGB6;PCDHGB4;MEGF11;PCDHGB3;NRXN1;PCDHGB2;GRIK4;CRMP1;SLC35F1;GRIK2;DRP2;TRIM9;LRRTM3;MAP2;SNTG1;TNR;SOX8;NCAM1;GRIA3;GRIA4;OPCML;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3;TMEM132B;PCDHGA2;PCDHGA1;LHFPL3;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;CDH10;PCDHGB1;DSCAML1;APBA2
DSCAM-IT1	46/100	3.110362831089401E-4	GRIA2;CRB1;PCDHGB7;PCDHGB6;PCDHGB4;LUZP2;PCDHGB3;PCDHGB2;PCDH15;GRIK4;GRIK2;MAP2;SOX8;NCAM1;FYN;SOX6;CSMD2;EPHB1;GRIA3;SCN1A;GRIA4;CLASP2;PCDHGA8;PCDHGA7;GRID2;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;TCF12;PCDHGA1;LSAMP;LHFPL3;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;NOVA1;PCDHGB1;DSCAML1;APBA2
LINC00237	45/100	5.860319946433883E-4	CRB1;PCDHGB7;PCDHGB6;PCDHGB4;MEGF11;PCDHGB3;PCDHGB2;GRIK4;CRMP1;GRIK2;TRIM9;LRRTM3;MAP2;SNTG1;TNR;BAALC;SOX8;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;TCF12;LHFPL3;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;NOVA1;CDH10;PCDHGB1;DSCAML1;APBA2
LINC01074	45/100	5.860319946433883E-4	CRB1;ADCYAP1R1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;SLC1A3;GRIK4;ADCY2;FMN2;KCNA6;NDRG2;PHACTR3;TNR;DENND5A;NCAM1;CTNNA2;JAM2;CLASP2;PCDHGA8;PCDHGA7;NTRK2;PCDHGA6;DTNA;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;GPR75;QKI;GABRG1;PCDHGA9;PCDHGA10;BCAN;PCDHGA11;PC

			DHGA12;RFX4;PCDHGB1;SLC25A53;ASTN1
LINC01546	45/100	5.8603199464338 83E-4	*PCDHGB7;PCDHGB6;MEGF11;PCDHGB4;PCDH GB3;PCDHGB2;GRIK4;SLC35F1;GRIK2;TRI M9;LRRTM3;SNTG1;MAP2;TNR;BAALC;SOX8 ;NCAM1;LRRC4C;CACNG2;GRIA3;GRIA4;PC DHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5 ;DSCAM;WSCD1;PCDHGA4;PCDHGA3;TMEM13 2B;PCDHGA2;PCDHGA1;LHFPL3;SEZ6L;PCD HGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;P CDHGA12;CDH10;PCDHGB1;DSCAML1;ASTN1*
LINC01102	45/100	5.8603199464338 83E-4	*PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCD HGB2;GRIK4;CRMP1;GRIK2;DRP2;TRIM9;D PP6;LRRTM3;MAP2;SNTG1;TSPAN7;SOX8;N CAM1;LRRC4C;CACNG2;GRIA3;GRIA4;CLAS P2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5; DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2 ;PCDHGA1;LHFPL3;SEZ6L;PCDHGA9;PCDHG A10;GNAO1;ATAT1;PCDHGA11;PCDHGA12;C DH10;PCDHGB1;DSCAML1;UNC79;ASTN1*
LINC02588	45/100	5.8603199464338 83E-4	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2 ;PCDHGB3;PCDHGB2;PCDH15;GRIK4;CRMP1 ;SLC35F1;IQCJ- SCHIP1;TRIM9;LRRTM3;SNTG1;MAP2;BAAL C;SOX8;NCAM1;GRIA3;PCDHGA8;PCDHGA7; GRID2;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4 ;KCND2;PCDHGA3;PCDHGA2;PCDHGA1;TCF1 2;LHFPL3;QKI;PCDHGA9;PCDHGA10;ATAT1 ;BCAN;PCDHGA11;PCDHGA12;NOVA1;CDH10 ;PCDHGB1;MKRN3;APBA2*
ANKRD62P1- PARP4P3	45/100	5.8603199464338 83E-4	*GRIA2;CRB1;ADCYAP1R1;LUZP2;CTNND2;P CDH15;GRIK3;GRIK4;NDRG2;ARHGAP35;OP HN1;TRPS1;FAM110B;LRIG1;SOX8;DENND5 A;DLGAP1;NCAM1;KCNN3;CSMD2;GRIA3;SC N1A;GRIA4;CLASP2;NTRK2;DSCAM;KCND2; CADM2;TCF12;OSGIN2;IQCJ;QKI;DNM3;BC AN;RAB30;FRMD5;FCHSD2;NFIA;DAAM2;NO VA1;TTC3;MKRN3;ZMYND11;DSCAML1;ARHG EF6*
NCAM1-AS1	45/100	5.8603199464338 83E-4	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;NRXN1;PCDHGB2;GRIK4;CRMP1;FMN2; GRIK2;SCAMP5;TRIM9;DPP6;LRRTM3;MAP2 ;NCAM1;LRRC4C;GRIA3;GPR158;GRIA4;CL ASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2; PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3 ;PCDHGA2;NTRK3;PCDHGA1;LSAMP;PCDHGA 9;GNAO1;PCDHGA10;DNM3;PCDHGA11;PCDH GA12;CDH10;PCDHGB1;UNC79;ASTN1*
GSN-AS1	45/100	5.8603199464338 83E-4	*MACF1;ANKRD36;KMT2C;GPR21;LAMA4;DOC K7;TULP4;FMN1;ASAP1;GPATCH2L;SPATA5 ;LPP;DOCK10;AKAP13;ATXN1;SGCD;CHST1 1;ZNF407;TIMP2;POTEE;ABL2;EPG5;POTE F;HMCN1;ERC1;EVI5;TEAD1;SRGAP2B;FAR P2;MAP3K3;RBFOX2;SORT1;ANKRD44;SAMD 4A;MITF;GANC;TANC1;FER;KATNAL1;PEAK 1;CDC42EP3;PMP22;MSRB3;VCL;TNRC6B*
CPB2-AS1	45/100	5.8603199464338 83E-4	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB 3;NRXN1;PCDHGB2;GRIK4;ABAT;GRIK2;TR IM9;LRRTM3;MAP2;TSPAN7;TNR;BAALC;DE NND5A;SOX8;NCAM1;GRIA3;GRIA4;CLASP2*

			;PCDHGA8;PCDHGA7;ARNT2;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;LHFPL3;PCDHGA9;PCDHGA10;GNAO1;IGSF11;ATAT1;PCDHGA11;PCDHGA12;CDH10;PCDHGB1;ASTN1
NMBR-AS1	45/100	5.860319946433883E-4	FTO;TPH2;ATP8A2;MAST4;KCNE4;GRIK1;LRP2;FRY;ABCC11;RERG;LRRC53;PHF21B;DACH1;GRM4;ERBB4;KIAA1324;SUSD4;MALRD1;PRKACB;EDIL3;UNC13A;PCDH9;NEGR1;SIAH3;TPRG1;SEMA6D;MAGI2;TNNI3K;MANEAL;ESR1;GDAP1;GABRG2;DCDC1;DCLK1;MED13L;CACNB2;XKR7;SLC5A8;PEX5L;FGF14;SLCO3A1;KCNS3;PI15;CCDC170;FGF12
CXXC4-AS1	45/100	5.860319946433883E-4	GRIA2;DGKB;CTNND2;NRXN1;PCDH15;GRIK4;CRMP1;ABAT;GRIK2;SCAMP5;DPP6;OPHN1;LRRTM3;MAP2;TNR;DENND5A;NCAM1;NCAM2;LRRC4C;CACNG2;GRIA3;GPR158;TRIM23;GRIA4;CLASP2;GRID2;DSCAM;KCND2;CADM2;KIDINS220;TCF12;LSAMP;LHFPL3;SEZ6L;QKI;GNAO1;DNM3;BCAN;APC;NOVA1;CDH10;CNTN1;DSCAML1;UNC79;ASTN1
NNT-AS1	45/100	5.860319946433883E-4	PCDHGB7;PCDHGB6;FAM13C;PCDHGB4;PCDHGB3;PCDHGB2;GRIK4;FMN2;TRIM9;LRRTM3;MAP2;TSPAN7;BAALC;DENND5A;NCAM1;SOX6;GRIA3;TRIM23;GRIA4;CLASP2;BBS2;PCDHGA8;PCDHGA7;ARNT2;PCDHGA6;PCDHGA5;ZHX3;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;MAGI2;PCDHGA1;LSAMP;FBXL17;PRKCA;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;APC;PCDHGB1;MAPRE2;ASTN1
LINC01351	44/100	0.0012010527864875081	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;GRIK4;SLC35F1;FMN2;TRIM9;LRRTM3;MAP2;BAALC;DENND5A;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LSAMP;LHFPL3;QKI;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;CDH10;PCDHGB1;APBA2;ASTN1
LINC02234	44/100	0.0012010527864875081	PCDHGB7;KHDRBS3;PCDHGB6;PCDHGB4;PCDHGB3;PCDHGB2;SLC35F1;AKAP6;GRIK2;TRIM9;DPP6;LRRTM3;SNTG1;MAP2;TSPAN7;BAALC;DENND5A;FYN;NCAM1;LRRC4C;GRIA3;JAM2;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;LHFPL3;RGMB;CORO2B;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;NOVA1;CDH10;PCDHGB1;ASTN1
LINC01963	44/100	0.0012010527864875081	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;GRIK4;CRMP1;FMN2;TRIM9;DPP6;LRRTM3;MAP2;DPYSL2;TSPAN7;NCAM1;FYN;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;GNAO1;DNM3;PCDHGA11;PCDHGA12;APC;CDH10;PCDHGB1;APBA2;ASTN1
LINC00906	44/100	0.0012010527864875081	CRB1;ADCYAP1R1;PCDHGB7;PCDHGB4;LUZP2;CTNND2;PCDHGB3;PCDHGB2;PCDH15;GRI

			K4;ADCY2;FMN2;NDRG2;ADCY8;SNN;OPHN1 ;DENND5A;NCAM1;KCNN3;SOX6;EPHB1;GRI A3;JAM2;GRIA4;PCDHGA8;PCDHGA7;PCDHG A6;PCDHGA5;BTBD17;PCDHGA4;CADM2;PCD HGA3;PCDHGA1;LSAMP;PDE4DIP;QKI;PCDH GA10;BCAN;PCDHGA11;FRMD5;PCDHGA12;D AAM2;PCDHGB1;SLC25A53
EDNRB-AS1	44/100	0.0012010527864 875081	*MIPEP;PCDHGB7;CHRM1;PCDHGB6;CAB39L; PCDHGB4;LUZP2;CTNND2;PCDHGB3;PCDHGB 2;ADCY2;AKAP6;VPS26B;FMN2;DACH2;SLC 4A4;EDNRB;RIC8B;OPHN1;BAALC;TRIM23; CLASP2;BBS2;PCDHGA8;PCDHGA7;ARNT2;P CDHGA6;PCDHGA5;PCDHGA4;PCDHGA3;PCDH GA2;PCDHGA1;LSAMP;QKI;PCDHGA9;IGSF1 1;PCDHGA10;PCDHGA11;PCDHGA12;DPY19L 2;DAAM2;CDH10;PCDHGB1;CPE*
ASIC4-AS1	44/100	0.0012010527864 875081	*PCDHGB7;PCDHGB6;MEGF11;PCDHGB4;PCDH GB3;PCDHGB2;GRIK4;GRIK2;DRP2;TRIM9; LRRTM3;MAP2;SNTG1;FAM110B;TNR;SOX8; NCAM1;CACNG2;GRIA3;GRIA4;CLASP2;PCD HGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM; PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHG A1;TCF12;LHFPL3;SEZ6L;PCDHGA9;PCDHG A10;ATAT1;BCAN;PCDHGA11;PCDHGA12;CD H10;PCDHGB1;DSCAML1;UNC79*
SOX21-AS1	44/100	0.0012010527864 875081	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;LUZP2; CTNND2;PCDHGB3;PCDHGB2;GRIK4;FMN2;N DRG2;TRIM9;SNN;LRRTM3;MAP2;BAALC;SO X8;NCAM1;GRIA3;GRIA4;PCDHGA8;PCDHGA 7;NTRK2;PCDHGA6;PCDHGA5;DSCAM;PCDHG A4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;TC F12;LSAMP;QKI;PCDHGA9;PCDHGA10;BCAN ;PCDHGA11;PCDHGA12;RFX4;CDH10;PCDHG B1;APBA2;ASTN1*
SEPTIN7-AS1	44/100	0.0012010527864 875081	*ADCYAP1R1;PCDHGB7;PCDHGB6;PCDHGB4;C TNND2;PCDHGB3;PCDHGB2;GRIK4;ADCY2;F MN2;NDRG2;TRIM9;SNN;BAALC;DENND5A;N CAM1;KCNN3;JAM2;CLASP2;BBS2;PCDHGA8 ;PCDHGA7;PCDHGA6;DTNA;ZHX3;PCDHGA5; PCDHGA4;PCDHGA3;PCDHGA2;MAGI2;PCDHG A1;GPR75;ZDHHC17;QKI;PCDHGA9;PCDHGA 10;PCDHGA11;PCDHGA12;APC;TBC1D5;RFX 4;PCDHGB1;SLC25A53;ARHGEF6*
GPR158-AS1	44/100	0.0012010527864 875081	*PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCD HGB2;GRIK4;GRIK2;FMN2;SCAMP5;JPH4;T RIM9;DPP6;LRRTM3;MAP2;TNR;NCAM1;LRR C4C;CACNG2;GRIA3;GPR158;GRIA4;CLASP 2;PCDHGA8;PCDHGA7;PCDHGA6;UNC13A;PC DHGA5;PCDHGA4;CADM2;PCDHGA3;PCDHGA2 ;PCDHGA1;LSAMP;PCDHGA9;GNAO1;PCDHGA 10;PCDHGA11;FAM155A;PCDHGA12;CDH10; REEP2;PCDHGB1;UNC79;ASTN1*
MIR9-3HG	44/100	0.0012010527864 875081	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2 ;PCDHGB3;PCDHGB2;PCDH15;GRIK4;GRIK2 ;NDRG2;TRIM9;OPHN1;LRRTM3;MAP2;SOX8 ;DENND5A;NCAM1;EPHB1;GRIA3;GRIA4;CL ASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA 5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHG A2;TCF12;PCDHGA1;QKI;PCDHGA10;ATAT1*

			;BCAN;PCDHGA11;PCDHGA12;FCHSD2;CDH10;PCDHGB1;DSCAML1;APBA2
LINC02293	43/100	0.002722181580630758	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;PCDH15;GRIK4;CRMP1;TRIM9;MAP2;SOX8;NCAM1;FYN;CSMD2;GRIA3;SCN1A;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;DSCAM;KCND2;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;TCF12;QKI;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;NOVA1;PCDHGB1;MKRN3;DSCAML1;APBA2*
GRID1-AS1	43/100	0.002722181580630758	*FAM49A;PCDHGB7;DOCK3;PCDHGB6;ATP8A1;PCDHGB4;PCDHGB3;GRIK4;SCAMP5;DPP6;MAP2;NCAM1;FYN;LRRC4C;SCAPER;TRIM23;CLASP2;ZNF540;PCDHGA8;TUB;PCDHGA7;PCDHGA6;PCDHGA5;PCDHGA4;CADM2;GRID1;PCDHGA3;KIDINS220;PCDHGA2;PCDHGA1;PCDHGA9;GNAO1;PCDHGA10;DNM3;MGAT4C;ARMCX4;PCDHGA11;PCDHGA12;PCDHGB1;DSCAML1;UNC79;ASTN1;CDS2*
CCND2-AS1	43/100	0.002722181580630758	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;CRMP1;FMN2;KCNA6;TRIM9;DPP6;LRRTM3;MAP2;SOX8;NCAM1;FYN;LRRC4C;GRIA3;GRIA4;CLASP2;BBS2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;GRID1;PCDHGA2;NTRK3;PCDHGA1;PCDHGA9;PCDHGA10;GNAO1;PCDHGA11;PCDHGA12;IL1RAPL1;PCDHGB1;DSCAML1;ASTN1*
FOXG1-AS1	43/100	0.002722181580630758	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;NRXN1;PCDHGB2;SLC1A3;GRIK4;SLC35F1;FMN2;IQCJ-SCHIP1;TRIM9;LRRTM3;SNTG1;MAP2;BAALC;DENND5A;GRIA3;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;WSCD1;PCDHGA4;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LHFPL3;QKI;PCDHGA9;PCDHGA10;ATAT1;PCDHGA11;PCDHGA12;NOVA1;RFX4;CDH10;PCDHGB1;APBA2;ASTN1*
LINC00652	42/100	0.004902856023861726	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCDHGB2;GRIK4;CRMP1;GRIK2;TRIM9;LRRTM3;MAP2;TSPAN7;BAALC;SOX8;NCAM1;EPHB1;GRIA3;GRIA4;PCDHGA8;PCDHGA7;PCDHGA6;GRID2;PCDHGA5;BTBD17;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;TCF12;LSAMP;QKI;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;CDH10;PCDHGB1;APBA2;ASTN1*
LINC00994	42/100	0.004902856023861726	*ADCYAP1R1;PCDHGB7;PCDHGB6;PCDHGB4;LUZP2;CTNND2;PCDHGB3;NRXN1;PCDHGB2;GRIK4;ADCY2;FMN2;NDRG2;LRRTM3;DENND5A;SOX8;NCAM1;KCNN3;RHBDL3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;GPR75;QKI;PCDHGA9;PCDHGA10;GNAO1;PCDHGA11;PCDHGA12;DAAM2;CDH10;PCDHGB1*
LINC02731	42/100	0.004902856023861726	*PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCDHGB2;GRIK4;CRMP1;GRIK2;DPP6;LRRTM3;*

			MAP2;SOX8;NCAM1;LRRC4C;CACNG2;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;SEZ6L;PCDHGA9;PCDHGA10;GNAO1;ATAT1;PCDHGA11;FAM155A;PCDHGA12;REEP2;PCDHGB1;DSCAML1;UNC79;ASTN1
LINC01114	42/100	0.00490285602386 1726	CRB1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;SLC1A3;GRIK4;SLC35F1;FMN2;FGF1;IQCJ-SCHIP1;TRIM9;SNN;DPYSL2;BAALC;DPF3;DENND5A;CTNNA2;JAM2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;WSCD1;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;DENND2A;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;APC;RFX4;PCDHGB1;APBA2;ASTN1
LINC01141	42/100	0.00490285602386 1726	PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;SLC1A3;GRIK4;ADCY2;FMN2;FGF1;NDRG2;IQCJ-SCHIP1;TRIM9;SNN;DPYSL2;BAALC;DENND5A;NCAM1;KCNN3;GRIA3;JAM2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;PCDHGA4;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;APC;RFX4;PCDHGB1;APBA2
LINC02488	42/100	0.00490285602386 1726	CRB1;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;PCDH15;GRIK3;CRMP1;IQCJ-SCHIP1;TRIM9;MAP2;SNTG1;SOX8;NCAM1;FYN;CSMD2;EPHB1;GRIA3;SCN1A;CLASP2;PCDHGA8;PCDHGA7;GRID2;PCDHGA6;PCDHGA5;DSCAM;WSCD1;KCND2;PCDHGA4;PCDHGA3;PCDHGA2;TCF12;PCDHGA1;LHFPL3;QKI;ATAT1;BCAN;NOVA1;CDH10;PCDHGB1;MKRN3;APBA2
LINC01152	42/100	0.00490285602386 1726	PCDHGB7;NLGN1;PCDHGB6;MAML2;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;DOCK7;GRIK4;TRIM9;MAP2;BAALC;DENND5A;NCAM1;ZNF501;JAM2;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;PCDHGA4;ST8SIA1;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;TCF12;QKI;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;APC;PCDHGB1;WDPCP;ZNF730;ASTN1
LINC02598	42/100	0.00490285602386 1726	CRB1;LUZP2;CTNND2;PCDH15;GRIK4;CRMP1;ADCY2;GRIK2;NDRG2;IQCJ-SCHIP1;TRIM9;OPHN1;LRRTM3;MAP2;SNTG1;BAALC;SOX8;NCAM1;KCNN3;CSMD2;EPHB1;GRIA3;GRIA4;MARK1;CLASP2;NTRK2;GRID2;DSCAM;KCND2;TCF12;LSAMP;LHFPL3;QKI;ATAT1;BCAN;VANGL2;FCHSD2;NOVA1;CDH10;MKRN3;DSCAML1;APBA2
LINC02552	42/100	0.00490285602386 1726	CRB1;TRIM51;ITIH6;WDR63;XYLT1;FMN1;AKAP6;RLBP1;EDNRB;SGCD;UBL3;GNG2;CHST11;SCFD2;CHL1;LRRTM4;CHCHD6;HMCN1;STK32A;ANKS1A;ZC3H13;DISC1;SOX5;PKNOX2;FARP2;MCOLN3;MYEF2;EYA1;PCDH7;PAX3;MITF;NSG1;S100B;CORO2B;IGSF11;P2RX7;NELL1;NRG3;RHOJ;MDGA2;CNIH3;SLC24A5

LINC02282	42/100	0.0049028560238 61726	*PCDHGB7;SHC3;PCDHGB6;PCDHGB4;PCDHGB 3;NRXN1;PCDHGB2;SLC1A3;SLC35F1;GRIK 2;TRIM9;LRRTM3;SNTG1;MAP2;BAALC;DEN ND5A;GRIA3;PCDHGA8;PCDHGA7;PCDHGA6; GRID2;PCDHGA5;DSCAM;WSCD1;PCDHGA4;P CDHGA3;TMEM132B;PCDHGA2;PCDHGA1;LSA MP;LHFPL3;SEZ6L;QKI;PCDHGA9;PCDHGA1 0;ATAT1;PCDHGA11;PCDHGA12;CDH10;PCD HGB1;APBA2;ASTN1*
LINC00609	42/100	0.0049028560238 61726	*CRB1;ADCYAP1R1;PCDHGB7;PCDHGB6;PCDH GB4;LUZP2;CTNND2;PCDHGB3;PCDH15;GRI K4;NDRG2;TRIM9;OPHN1;SOX8;DENND5A;N CAM1;FYN;KCNN3;GRIA3;GRIA4;CLASP2;P CDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCA M;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;TCF 12;PCDHGA1;QKI;PCDHGA10;ATAT1;BCAN; PCDHGA11;PCDHGA12;NOVA1;PCDHGB1;DSC AML1;APBA2*
LINC02339	42/100	0.0049028560238 61726	*PCDHGB7;SHC3;PCDHGB6;MEGF11;PCDHGB4 ;NRXN1;SLC35F1;GRIK2;DRP2;LRRTM3;SN TG1;MAP2;TNR;BAALC;SOX8;LRRC4C;CACN G2;GRIA3;GRIA4;PCDHGA8;GRID2;PCDHGA 6;CA10;PCDHGA5;DSCAM;PCDHGA4;CADM2; PCDHGA3;TMEM132B;PCDHGA2;PCDHGA1;LH FPL3;SEZ6L;PCDHGA9;PCDHGA10;ATAT1;B CAN;PCDHGA12;CDH10;PCDHGB1;DSCAML1; UNC79*
ARHGEF7-AS1	42/100	0.0049028560238 61726	*MAML2;DENND5B;FAM13C;RNF180;NRXN1;I TSN1;CRMP1;FRY;NOL4;SCAMP5;CTIF;DPP 6;OPHN1;MAP2;DENND5A;WDR7;NCAM1;DIP 2C;SBF2;MPDZ;TRIM23;CLASP2;NCOA1;ZH X3;FBXW11;CADM2;KIDINS220;TCF12;EBF 1;QKI;DNM3;SGSM1;ARMCX4;NBEA;SETBP1 ;APC;WDFY3;TCF4;SIK2;TLN2;ZNF510;CD S2*
NR2F1-AS1	42/100	0.0049028560238 61726	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;NRXN1;PCDHGB2;SLC1A3;GRIK4;ADCY 2;FMN2;NDRG2;SNN;DPYSL2;BAALC;DENND 5A;FYN;NCAM1;GRIA3;JAM2;BBS2;PCDHGA 8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;PCDH GA4;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;L SAMP;QKI;PCDHGA9;PCDHGA10;PCDHGA11; PCDHGA12;APC;RFX4;CDH10;PCDHGB1;APB A2*
LRRC7-AS1	42/100	0.0049028560238 61726	*ADCYAP1R1;GABRB1;RTN1;CTNND2;NRXN1; SLC1A2;OTUD7A;FMN2;NDRG2;SNN;GRM5;B RINP1;MAP2;CHN1;CREG2;DENND5A;DLGAP 1;NCAM1;ERC2;SH3GL2;OPCML;ARNT2;DTN A;CADM2;NTRK3;LSAMP;GPR75;ANK2;SLC3 9A12;GRIN2B;GABRG1;GNAO1;CNKSR2;DLG 2;APC;LRRC7;DNAJC6;DOK6;CDH10;RGS7B P;ASTN1;RAPGEF4*
ARHGEF26-AS1	42/100	0.0049028560238 61726	*ADCYAP1R1;PCDHGB7;PCDHGB6;PCDHGB4;L UZP2;CTNND2;PCDHGB3;NRXN1;PCDHGB2;S LC1A3;GRIK4;ADCY2;FMN2;NDRG2;SNN;BA ALC;NCAM1;KCNN3;JAM2;PCDHGA8;PCDHGA 7;NTRK2;PCDHGA6;DTNA;PCDHGA5;PCDHGA 4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSA MP;GPR75;QKI;PCDHGA9;PCDHGA10;PCDHG*

			A11;PCDHGA12;RFX4;CDH10;PCDHGB1;CPE ;ASTN1
BDNF-AS	42/100	0.0049028560238 61726	*PCDHGB7;PCDHGB6;FAM13C;PCDHGB4;CTNN D2;PCDHGB3;PCDHGB2;GRIK4;ABAT;FMN2; NDRG2;SNN;TSPAN7;BAALC;DENND5A;NCAM 1;GRIA3;JAM2;GRIA4;CLASP2;BBS2;PCDH GA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;PC DHGA4;CADM2;PCDHGA3;PCDHGA2;MAGI2;P CDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;G NAO1;PCDHGA11;PCDHGA12;CDH10;PCDHGB 1;ASTN1*
LINC01561	41/100	0.0091846112822 91914	*PCDHGB7;PCDHGB6;PCDHGB4;LUZP2;CTNND 2;PCDHGB3;PCDHGB2;PCDH15;GRIK4;ADCY 2;FMN2;NDRG2;SNN;BAALC;DENND5A;SOX8 ;NCAM1;KCNN3;GRIA3;GRIA4;PCDHGA8;PC DHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4 ;CADM2;PCDHGA3;PCDHGA2;NTRK3;PCDHGA 1;LSAMP;QKI;PCDHGA9;PCDHGA10;GNAO1; PCDHGA11;PCDHGA12;PCDHGB1;APBA2;AST N1*
LINC02549	41/100	0.0091846112822 91914	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;RNF1 80;PCDHGB3;PCDHGB2;SLC1A3;FMN2;FGF1 ;IQCJ- SCHIP1;TRIM9;DPF3;BAALC;FYN;RGS6;JA M2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCD HGA5;WSCD1;PCDHGA4;PCDHGA3;PCDHGA2; MAGI2;DENND2A;PCDHGA1;CORO2B;QKI;PC DHGA9;PCDHGA10;PCDHGA11;PCDHGA12;IG DCC4;APC;PTPRA;RFX4;PCDHGB1;ASTN1*
LINC01066	41/100	0.0091846112822 91914	*PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDH GB2;SLC1A2;SLC1A3;FMN2;FGF1;SNN;MAP 2;DPYSL2;BAALC;NCAM1;CTNNA2;JAM2;OR 10K2;PCDHGA8;PCDHGA7;ARNT2;PCDHGA6; DTNA;PCDHGA5;PCDHGA4;PCDHGA3;PCDHGA 2;MAGI2;DENND2A;PCDHGA1;LSAMP;SLC39 A12;CORO2B;QKI;PCDHGA9;PCDHGA11;PCD HGA12;APC;RFX4;REEP2;APBA2;ASTN1*
LINC00437	41/100	0.0091846112822 91914	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;RNF1 80;PCDHGB3;PCDHGB2;SLC1A2;SLC1A3;FM N2;FGF1;SPATA6;SNN;BAALC;CTNNA2;RGS 6;JAM2;MAPK4;PCDHGA8;PCDHGA7;ARNT2; PCDHGA6;DTNA;PCDHGA5;PCDHGA4;PCDHGA 3;PCDHGA2;MAGI2;DENND2A;ANK2;CORO2B ;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDH GA12;APC;PTPRA;RFX4;PCDHGB1;ASTN1*
LINC01741	41/100	0.0091846112822 91914	*CRB1;SHC3;DGKB;FAM13C;MEGF11;GRIK4; SLC35F1;GRIK2;DRP2;TRIM9;LRRTM3;FAM 184B;MAP2;FAM110B;TNR;SOX8;CSMD3;SO X6;LRRC4C;CACNG2;EPHB1;DLGAP2;GRIA3 ;GPR158;TECTA;GRIA4;CA10;PCDHGA5;DS CAM;TMEM132B;TCF12;LHFPL3;MYO16;PCD HGA10;BCAN;PCDHGA12;FCHSD2;PCDHGB1; TOX;FGF12;DSCAML1*
LINC01563	41/100	0.0091846112822 91914	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;CTNND2 ;PCDHGB3;PCDHGB2;GRIK4;CRMP1;SLC35F 1;GRIK2;FMN2;TRIM9;BAALC;DENND5A;NC AM1;FYN;GRIA4;CLASP2;PCDHGA8;PCDHGA 7;PCDHGA6;PCDHGA5;PCDHGA4;PCDHGA3;P CDHGA2;PCDHGA1;LSAMP;CORO2B;QKI;PCD*

			HGA9;PCDHGA10;IGSF11;ATAT1;BCAN;PCDHGA11;PCDHGA12;RFX4;PCDHGB1;APBA2;ASTN1
LINC02008	41/100	0.009184611282291914	ADCYAP1R1;NRXN1;GRIK4;CRMP1;GRIK2;FMN2;KCNA6;NPAS3;DRP2;TRIM9;CECR2;OPHN1;LRRTM3;MAP2;SNTG1;TNR;BAALC;SOX8;DENND5A;ZPLD1;NCAM1;CSMD3;CACNG2;GRIA3;GPR158;GRIA4;CLASP2;GRID2;DSCAM;CADM2;TCF12;PCDHGA1;GABRA3;LHFPL3;QKI;MYO16;PCDHGA10;BCAN;CDH10;DSCAML1;ASTN1
LINC02720	41/100	0.009184611282291914	PANK3;ZNF493;NVL;ZBTB20;ITPR2;LDLRAD4;FAM214A;CCDC144A;KIAA0040;TMEM241;ZBTB41;HS6ST3;KIAA1109;KIAA1328;ERBB4;TRPS1;SLC16A7;APBB2;THSD7A;ZNF720;FNIP1;RNF152;YAF2;RALGPS2;VAV3;UNC13C;MON2;LRBA;TBC1D9;PRLR;ESR1;PBX1;AR;ZNF91;RAB30;CCNG2;SIDT1;ZNF678;KIAA0825;DGKI;CNTNAP5
ZNF32-AS3	41/100	0.009184611282291914	GRIA2;SPIN3;NRXN1;GRIK4;DRP2;OPHN1;LRRTM3;MAP2;FAM110B;LRIG1;TNR;DENND5A;DLGAP1;NCAM1;SRGAP3;ZNF501;NCAM2;LRRC4C;EPHB1;GRIA3;TRIM23;GRIA4;CLASP2;GRID2;DSCAM;KCND2;CADM2;NTRK3;ZFP2;TCF12;LHFPL3;DNM3;ATAT1;FCHSD2;APC;CDH10;TTC3;ZMYND11;DSCAML1;ZNF510;ASTN1
GDNF-AS1	41/100	0.009184611282291914	PCDHGB7;KHDRBS3;PCDHGB6;PCDHGB4;PCDHGB3;PCDHGB2;PCDH15;AKAP6;GRIK2;LRRTM3;MAP2;SOX8;NCAM1;SOX6;GPR158;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;PCDHGA9;PCDHGA10;GNAO1;ATAT1;BCAN;PCDHGA11;P2RX6;PCDHGA12;MMP16;PCDHGB1;MDGA2;DSCAML1;UNC79;ASTN1
SEMA6A-AS2	41/100	0.009184611282291914	NLGN1;DENND5B;PCDHGB4;PCDHGB3;DOCK7;FMN1;EDNRB;NKAIN3;UBL3;MXI1;DENND5A;PHACTR1;DIP2C;SOX6;CC2D2A;SRGAP2B;PKNOX2;CLASP2;PCDHGA8;PCDHGA7;ARNT2;MYEF2;PCDHGA4;FBXW11;PCDHGA3;MICAL3;PAX3;CABLES1;MITF;ANK2;MFSD12;QKI;IGSF11;P2RX7;PCDHGA12;NRG3;APC;DAAM2;MDGA2;MAPRE2;SLC24A5
EDIL3-DT	41/100	0.009184611282291914	NRP1;GPR21;TGFB1I1;LAMA4;PRUNE2;PRICKLE2;MYLK;LOXL2;MPRIP;CALD1;RAB23;DNAJB4;ABI3BP;DIP2C;SNX7;FILIP1L;EDIL3;GPC6;PRKG1;MEF2A;ARHGEF10;RBFOX2;PDE4D;AFAP1;EML1;BICC1;PTPRD;VCAN;KATNAL1;CDH11;ITGA8;CASQ2;CDH13;MSRB3;ROR1;MRVI1;ESYT2;RAPGEF5;PPP1R12B;VCL;FERMT2
PPP1R12A-AS1	41/100	0.009184611282291914	SYNM;RABGAP1;SYNPO2;PRUNE2;STON1;PRICKLE2;ARID4A;CACNA1C;LPP;TOR1AIP1;MYLK;ZCWPW2;PLN;DPP8;CALD1;RAB23;MYH11;PGM5;FPGT-TNNI3K;SBF2;SCAPER;TEAD1;TNS1;EPM2A;NDE1;FBXL17;FOXN3;STON1-GTF2A1L;EML1;CLIP1;SETBP1;JMY;KCNMA

			1;CCSER2;MSRB3;MRVI1;PPP1R12B;ZMYND 11;ZNF510;VCL;FERMT2
NKX2-2-AS1	41/100	0.0091846112822 91914	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB 3;PCDHGB2;CACNA1A;GRIK4;CRMP1;SLC35 F1;NOL4;TRIM9;LRRTM3;SNTG1;BAALC;SO X8;NCAM1;GRIA3;PCDHGA8;PCDHGA7;PCDH GA6;PCDHGA5;DSCAM;WSCD1;PCDHGA4;PCD HGA3;TMEM132B;PCDHGA2;PCDHGA1;GAD2; LHFPL3;PCDHGA9;PCDHGA10;ATAT1;BCAN; PCDHGA11;PCDHGA12;NOVA1;PCDHGB1;CPE ;APBA2*
MAPT-AS1	41/100	0.0091846112822 91914	*CRB1;RTN1;PCDHGB4;CTNND2;NRXN1;GRIK 4;CRMP1;ADCY2;FMN2;GRIK2;TRIM9;OPHN 1;LRRTM3;MAP2;DENND5A;SOX8;NCAM1;LR RC4C;GRIA3;GRIA4;CLASP2;PCDHGA8;GRI D2;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDH GA3;PCDHGA2;TCF12;PCDHGA1;LSAMP;QKI ;GNAO1;PCDHGA10;BCAN;NOVA1;CDH10;PC DHGB1;DSCAML1;ASTN1*
LINC02798	40/100	0.0165610259693 89458	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;SLC1A3;FMN2;FGF1;CNN3;I QCJ- SCHIP1;TRIM9;SNN;DPYSL2;ADORA3;BAAL C;DENND5A;FYN;SRGAP2B;JAM2;PCDHGA8; PCDHGA7;PCDHGA6;DTNA;PCDHGA5;PCDHGA 4;PCDHGA3;PCDHGA2;DENND2A;PCDHGA1;C ORO2B;QKI;PCDHGA9;PCDHGA10;PCDHGA11 ;PCDHGA12;NOVA1;RFX4;PCDHGB1;APBA2*
LINC01516	40/100	0.0165610259693 89458	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;GRIK4;CRMP1;FMN2;TRIM9; DPP6;TSPAN7;BAALC;NCAM1;GRIA3;GPR15 8;JAM2;GRIA4;CLASP2;PCDHGA8;PCDHGA7 ;PCDHGA6;PCDHGA5;PCDHGA4;CADM2;PCDH GA3;PCDHGA2;PCDHGA1;LSAMP;PCDHGA9;P CDHGA10;GNAO1;PCDHGA11;PCDHGA12;RFX 4;CDH10;REEP2;PCDHGB1;APBA2;ASTN1*
LINC01103	40/100	0.0165610259693 89458	*PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCD HGB2;CRMP1;GRIK2;JPH4;TRIM9;DPP6;MA P2;LRRTM4;TSPAN7;NCAM1;LRRC4C;CACNG 2;GPR158;GRIA4;CLASP2;PCDHGA8;PCDHG A7;PCDHGA6;PCDHGA5;PCDHGA4;PCDHGA3; PCDHGA2;PCDHGA1;LSAMP;SEZ6L;PCDHGA9 ;PCDHGA10;GNAO1;IGSF11;PCDHGA11;FAM 155A;PCDHGA12;REEP2;PCDHGB1;UNC79;A STN1*
LINC00298	40/100	0.0165610259693 89458	*ADCYAP1R1;PCDHGB7;PCDHGB6;PCDHGB4;C TNND2;PCDHGB3;PCDHGB2;SLC1A3;GRIK4; ADCY2;FMN2;NDRG2;TRIM9;SNN;BAALC;DE NND5A;NCAM1;KCNN3;JAM2;BBS2;PCDHGA8 ;PCDHGA7;DTNA;PCDHGA5;PCDHGA4;PCDHG A3;PCDHGA2;PCDHGA1;GPR75;PRKCA;QKI; PCDHGA10;PCDHGA11;APC;DAAM2;RFX4;CD H10;PCDHGB1;SLC25A53;ASTN1*
LINC02058	40/100	0.0165610259693 89458	*GRIA1;ADCYAP1R1;PCDHGB7;PCDHGB6;PCD HGB4;LUZP2;CTNND2;NRXN1;PCDHGB2;GRI K4;ADCY2;FMN2;NDRG2;SNN;LRRTM3;BAAL C;DENND5A;NCAM1;KCNN3;GRIA3;GRIA4;C LASP2;PCDHGA8;NTRK2;GRID2;DTNA;DSCA M;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCD*

			HGA1;LSAMP;GPR75;QKI;PCDHGA10;APC;D AAM2;CDH10;PCDHGB1
LINC01340	40/100	0.0165610259693 89458	*OR11L1;MTPN;PCDHGB7;PCDHGB6;PCDHGB4 ;RNF180;PCDHGB3;PCDHGB2;SLC35F1;RYR 3;CNN3;SPRED3;TRIM9;PDE4B;BAALC;DPF 3;TRIM23;PCDHGA8;PCDHGA7;PCDHGA6;PC DHGA5;WSCD1;PCDHGA4;FBXW11;PCDHGA3; PCDHGA2;MAGI2;DENND2A;PCDHGA1;S100B ;CORO2B;PCDHGA9;PCDHGA10;IGSF11;PCD HGA11;PCDHGA12;PTPRA;VPS41;PCDHGB1; ASTN1*
LINC02110	40/100	0.0165610259693 89458	*PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCD HGB2;GRIK4;CRMP1;GRIK2;LRRTM3;MAP2; SOX8;NCAM1;SOX6;GRIA3;GPR158;GRIA4; CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDH GA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCD HGA2;PCDHGA1;LSAMP;PCDHGA9;GNAO1;PC DHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12 ;REEP2;PCDHGB1;DSCAML1;UNC79;ASTN1*
LINC02440	40/100	0.0165610259693 89458	*PCDHGB7;SHC3;PCDHGB6;PCDHGB4;PCDHGB 3;PCDHGB2;GRIK4;CRMP1;GRIK2;DRP2;LR RTM3;SNTG1;MAP2;TNR;SOX8;LRRC4C;CAC NG2;GRIA3;GRIA4;PCDHGA8;PCDHGA7;PCD HGA6;PCDHGA5;DSCAM;BTBD17;PCDHGA4;P CDHGA3;PCDHGA2;PCDHGA1;LHFPL3;SEZ6L ;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA 11;PCDHGA12;PCDHGB1;DSCAML1;UNC79*
MRVI1-AS1	40/100	0.0165610259693 89458	*RYR2;SYNM;TGFB1I1;SYNPO2;PRUNE2;STO N1;PRICKLE2;CACNA1C;LPP;SLC8A1;MYLK ;INPP5A;PLN;CALD1;RAB23;MYH11;PGM5; FLNC;FILIP1L;CC2D2A;CAMK2G;PRKG1;TN S1;GTF2A1L;PPP1R14A;TRPC4;NDE1;STON 1- GTF2A1L;EML1;ARHGAP10;PALLD;KCNMA1; ITGA8;CASQ2;MSRB3;MRVI1;PPP1R12B;PD ZRN3;VCL;FERMT2*
TMEM72-AS1	40/100	0.0165610259693 89458	*PCDHGB7;RTN1;PCDHGB6;PCDHGB4;CTNND2 ;PCDHGB3;NRXN1;PCDHGB2;GRIK4;ADCY2; NDRG2;FAM171A1;LRRTM3;MAP2;DENND5A; NCAM1;KCNN3;SH3GL2;GRIA3;GRIA4;CLAS P2;BBS2;PCDHGA8;PCDHGA7;ARNT2;PCDHG A6;ZHX3;PCDHGA5;PCDHGA4;CADM2;PCDHG A3;PCDHGA2;NTRK3;PCDHGA1;ANK2;QKI;D NM3;PCDHGB1;DSCAML1;APBA2*
PRICKLE2- AS3	40/100	0.0165610259693 89458	*MACF1;KMT2C;SYNPO2;STON1;PRICKLE2;Z BTB20;CACNA1C;ARHGAP5;SLC9C1;LPP;SY NE1;KIAA1109;ATXN1;DPP8;CALD1;ZNF40 7;EVI5;TEAD1;PRKG1;SHPRH;ZNF483;MON 2;RALGAPA1;VPS13C;ATRX;STON1- GTF2A1L;EML1;MYO9A;FER;KATNAL1;AGO3 ;SETBP1;NFIA;PEAK1;KCNMA1;NF1;CCSER 2;WDFY3;KIAA0825;FERMT2*
NDP-AS1	40/100	0.0165610259693 89458	*GRIA1;ADCYAP1R1;PCDHGB7;PCDHGB6;PCD HGB4;CTNND2;PCDHGB3;PCDHGB2;SLC1A3; GRIK4;ADCY2;FMN2;FGF1;NDRG2;ADCY8;N PAS3;IQCJ- SCHIP1;TRIM9;SNN;BAALC;DENND5A;CTNN A2;JAM2;PCDHGA8;PCDHGA7;PCDHGA6;DTN A;PCDHGA5;PCDHGA4;PCDHGA3;PCDHGA2;P*

			CDHGA1;QKI;DCLK1;PCDHGA9;PCDHGA11;PCDHGA12;RFX4;PCDHGB1;APBA2
KCNMA1-AS1	40/100	0.016561025969389458	*SYNM;TGFB1I1;SYNPO2;PRUNE2;STON1;PRICKLE2;NRXN3;CACNA1C;LPP;SLC8A1;MYLK;INPP5A;PLN;CALD1;RAB23;MYH11;PGM5;DMD;FLNC;FILIP1L;PRKG1;TNS1;GTF2A1L;RBFOX2;NDE1;ITGA1;ABCC9;FOXN3;STON1-GTF2A1L;EML1;METTL24;SETBP1;PALLD;KCNMA1;MSRB3;MRVI1;PPP1R12B;PDZRN3;VCL;FERMT2*
NFIA-AS2	40/100	0.016561025969389458	*ADCYAP1R1;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;SLC1A3;ADCY2;FMN2;FGF1;NDRG2;ADCY8;CNN3;IQCJ-SCHIP1;TRIM9;SNN;DPYSL2;ADORA3;BAALC;FYN;KCNN3;JAM2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;PCDHGA4;PCDHGA3;PCDHGA2;DENND2A;QKI;PCDHGA10;PCDHGA11;FRMD5;PCDHGA12;RFX4;PCDHGB1;SLC25A53;ASB3*
MYLK-AS1	40/100	0.016561025969389458	*SYNM;TGFB1I1;SYNPO2;PRUNE2;STON1;CACNA1C;LPP;SLC8A1;MYLK;RAP1A;INPP5A;PLN;CALD1;RAB23;MYH11;PGM5;DMD;FLNC;FILIP1L;PRKG1;TNS1;GTF2A1L;PPP1R14A;TRPC4;NDE1;FBXO32;STON1-GTF2A1L;EML1;ARHGAP10;PALLD;KCNMA1;CDC42EP3;ITGA8;CASQ2;MSRB3;MRVI1;PPP1R12B;PDZRN3;VCL;FERMT2*
ADAMTS9-AS2	40/100	0.016561025969389458	*NRP1;ENPEP;FLT1;PRKAA2;STXBP4;PRUNE2;ZBTB20;PTPRM;RORA;LDB2;SLC8A1;SYNE1;TTC28;PTPRG;PREX2;PKHD1;KIAA1109;ARHGAP42;KDR;ACAD11;CC2D2A;ZNF366;TNS1;MEF2A;CEP112;ZNF483;INSR;ITGA1;SLC16A12;MYO9A;SHROOM4;SNRK;EMCN;SETBP1;WDFY3;ALPK2;UTRN;FBXL5;RBMS2;RBMS3*
LINGO1-AS1	40/100	0.016561025969389458	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDHGB3;PCDHGB2;GRIK4;CRMP1;GRIK2;TRIM9;MAP2;TNR;BAALC;SOX8;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;PCDHGA4;PCDHGA3;TMEM132B;PCDHGA2;PCDHGA1;LHFPL3;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;PCDHGA12;NOVA1;PCDHGB1;LRRC3B;DSCAML1;APBA2*
PGR-AS1	40/100	0.016561025969389458	*SPEF2;CLSTN2;ZFAND4;SLC40A1;GREB1L;PIK3R3;LDLRAD4;EFCAB6;CELSR1;AFF3;FAM214A;KIAA0040;TMEM241;RERG;ZBTB41;ADAMTS19;ERBB4;TRPS1;KIAA1324;NRIP1;ISOC1;APBB2;RALGPS2;VAV3;KDM4B;ANKRD30B;LRBA;GREB1;TBC1D9;ELP3;PRLR;ESR1;PBX1;DCDC1;TTC39A;AR;RAB30;ZNF516;CCDC170;ZNF799*
LINC02520	39/100	0.02957131707325519	*CRB1;DENND5B;MEGF11;LAMA1;GRIK4;ABAT;GRIK2;DRP2;TRIM9;RELN;OPHN1;LRRTM3;MAP2;ADAMTS18;FAM110B;GPC3;TNR;SOX8;NCAM1;CSMD3;NCAM2;RHBDL3;CACNG2;EPHB1;GRIA3;GPR158;GRIA4;CLASP2;DSCAM;CADM2;TCF12;LHFPL3;SEZ6L;HS3ST4;*

			MYO16;BCAN;FCHSD2;DSCAML1;UNC79
LINC00606	39/100	0.0295713170732 5519	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;SLC1A2;SLC1A3;SLC35F1;F MN2;FGF1;TRIM9;SNN;LRRTM3;BAALC;JAM 2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDH GA5;WSCD1;PCDHGA4;PCDHGA3;PCDHGA2;N TRK3;PCDHGA1;DENND2A;QKI;PCDHGA9;PC DHGA10;BCAN;PCDHGA11;PCDHGA12;APC;R FX4;PCDHGB1;APBA2;ASTN1*
LINC02051	39/100	0.0295713170732 5519	*SLC24A3;RABGAP1;GPR21;TGFB1I1;CRMP1 ;SLC35F1;FHL5;GRIK2;SEL1L2;TRIM9;PL N;LRRTM3;RAB23;TMEM108;TNR;BAALC;DE NND5A;MYH11;NCAM1;EPHB1;GRIA3;PLXNA 4;SH3BGR;GRIA4;SPECC1;DSCAM;PCDHGA4 ;TRPC4;TCF12;PCDHGA1;LHFPL3;PCDHGA9 ;PCDHGA10;LRRC7;CASQ2;ITGA8;PCDHGB1 ;MRVI1;ASTN1*
LINC00511	39/100	0.0295713170732 5519	*CRB1;PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB 3;PCDHGB2;TRIM9;TMEM189;BAALC;POLR2 F;SOX8;BID;PCDHGA8;FARP2;PCDHGA7;PC DHGA6;PCDHGA5;DSCAM;PCDHGA4;ST8SIA1 ;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;LHFP L3;S100B;CORO2B;PCDHGA9;IGSF11;PCDH GA10;ATAT1;BCAN;PCDHGA11;FRMD5;PCDH GA12;TMEM117;PCDHGB1;MKRN3;APBA2*
LINC01349	39/100	0.0295713170732 5519	*SEMA5B;ENPEP;ADCYAP1R1;MTMR10;NLGN1 ;CTNND2;SLC22A2;RNF180;FGF1;CNN3;IQ CJ- SCHIP1;SNN;SNX29;ADORA3;DPYSL2;DPF3 ;DENND5A;KCNN3;ACAD11;SLC16A4;JAM2; SLC17A3;DTNA;ZHX3;SLC16A12;BBOX1;AN K2;QKI;ARHGAP24;KBTBD11;MSRA;DAB2;D AAM2;RFX4;CRYL1;SLC25A53;FBXL5;RGL1 ;MAPRE2*
LINC01640	39/100	0.0295713170732 5519	*SYNM;KCNE2;C2CD3;TGFB1I1;SYNPO2;STO N1;PRICKLE2;NRXN3;CACNA1C;LPP;MED15 ;INPP5A;KIAA1328;CALD1;MS4A15;PGM5; FILIP1L;PRKG1;RALGPS1;MAGI1;GTF2A1L ;ZNF483;RBFOX2;NDE1;FOXN3;STON1- GTF2A1L;EML1;PARD3B;TGFBR3;SETBP1;A SXL3;NFIC;KCNMA1;PI4KA;CCSER2;TTLL1 1;MRVI1;FERMT2;BMPR1A*
LINC00396	39/100	0.0295713170732 5519	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;SLC1A3;FMN2;FGF1;IQCJ- SCHIP1;TRIM9;SNN;DPYSL2;PDE4B;BAALC ;DPF3;JAM2;MAPK4;PCDHGA8;PCDHGA7;AR NT2;PCDHGA6;DTNA;PCDHGA5;PCDHGA4;PC DHGA3;PCDHGA2;DENND2A;PCDHGA1;LSAMP ;CORO2B;QKI;PCDHGA9;PCDHGA10;PCDHGA 11;PCDHGA12;RFX4;PCDHGB1;APBA2*
LINC01397	39/100	0.0295713170732 5519	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;OR9Q1;ADCY2;FMN2;CNN3;I QCJ- SCHIP1;TRIM9;SNN;DPYSL2;BAALC;GSG1L ;DENND5A;NCAM1;PLXNA4;JAM2;PCDHGA8; PCDHGA7;PCDHGA6;DTNA;PCDHGA5;PCDHGA 4;PCDHGA3;PCDHGA2;NTRK3;PCDHGA1;QKI ;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12 ;RFX4;PCDHGB1;CYLC2;APBA2*

LINC02134	39/100	0.0295713170732 5519	*PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCD HGB2;GRIK4;CRMP1;SLC35F1;GRIK2;TRIM 9;LRRTM3;SNTG1;MAP2;BAALC;SOX8;GRIA 3;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;D SCAM;WSCD1;BTBD17;PCDHGA4;PCDHGA3;P CDHGA2;PCDHGA1;LHFPL3;PCDHGA9;PCDHG A10;ATAT1;BCAN;PCDHGA11;PCDHGA12;NO VA1;CDH10;PCDHGB1;APBA2;ASTN1*
LINC01727	39/100	0.0295713170732 5519	*PCDHGB7;PCDHGB6;PCDHGB4;PCDHGB3;PCD HGB2;SLC1A2;SLC1A3;ABAT;SLC35F1;FGF 1;TRIM9;SNN;GRM5;BAALC;DPF3;RGS6;MA PK4;JAM2;PCDHGA8;LGI1;PCDHGA7;PCDHG A6;DTNA;PCDHGA5;WSCD1;PCDHGA4;PCDHG A3;PCDHGA2;DENND2A;PCDHGA1;ACYP2;SL C39A12;CORO2B;PCDHGA9;PCDHGA11;PCDH GA12;PCDHGB1;ACSBG1;ASTN1*
LINC01651	39/100	0.0295713170732 5519	*GRIA2;CRB1;CTTNBP2;MEGF11;NRXN1;PCD H15;GRIK4;GRIK2;TRIM9;OPHN1;LRRTM3; MAP2;TNR;SOX8;DENND5A;NCAM1;CSMD3;S OX6;LRRC4C;CACNG2;EPHB1;GRIA3;GRIA4 ;CLASP2;GRID2;DSCAM;CADM2;PCDHGA3;T CF12;PCDHGA1;LSAMP;LHFPL3;SEZ6L;BCA N;FCHSD2;CDH10;DSCAML1;UNC79;ASTN1*
LMCD1-AS1	39/100	0.0295713170732 5519	*ADCYAP1R1;PCDHGB7;PCDHGB4;CTNND2;PC DHGB3;NRXN1;SLC1A3;GRIK4;ADCY2;FMN2 ;NDRG2;IQCJ- SCHIP1;SNN;LRRTM3;BAALC;DENND5A;NCA M1;KCNN3;CLASP2;PCDHGA8;PCDHGA7;ARN T2;NTRK2;DTNA;PCDHGA4;PCDH9;PCDHGA3 ;PCDHGA2;MAGI2;PCDHGA1;LSAMP;QKI;PC DHGA10;PCDHGA12;APC;DAAM2;RFX4;PCDH GB1;ASB3*
INKA2-AS1	39/100	0.0295713170732 5519	*PCDHGB7;KHDRBS3;PCDHGB6;PCDHGB4;PCD HGB3;PCDHGB2;GRIK4;CRMP1;GRIK2;TRIM 9;DPP6;MAP2;DENND5A;NCAM1;FYN;GRIA3 ;GRIA4;PCDHGA8;PCDHGA7;PCDHGA6;PCDH GA5;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1 ;LSAMP;PCDHGA9;PCDHGA10;GNAO1;ATAT1 ;BCAN;PCDHGA11;PCDHGA12;NOVA1;REEP2 ;PCDHGB1;APBA2;ASTN1;RNF165*
GNG12-AS1	39/100	0.0295713170732 5519	*SYNM;ABCB5;DOCK7;STON1;SPATA6;CNN3; EDNRB;SGCD;UBL3;TIMP2;HMCN1;DIP2C;E VI5;CC2D2A;WLS;SOX5;PKNOX2;ST3GAL3; EPM2A;GTF2A1L;PHC2;MYEF2;SORT1;STX8 ;PCDH7;DENND2A;SAMD4A;PAX3;CABLES1; MITF;GNG12;STON1- GTF2A1L;IGSF11;NFIA;RHOJ;PRKD1;PDZR N3;SLC24A5;FERMT2*
MKLN1-AS	39/100	0.0295713170732 5519	*MTMR10;NLGN1;PLEKHB2;FAM13C;ZBTB20; SLC4A4;CDC14B;ARHGAP12;BCL2L13;IMMP 2L;UBL3;OPHN1;SOX6;SBF2;CC2D2A;METT L9;PAQR8;BBS2;ACBD5;ZHX3;MYEF2;FBXW 11;SLC2A13;PRKCA;ARHGAP24;KBTBD11;P ARD3B;IGSF11;IFT88;TBC1D5;SPATA13;V PS41;NAPEPLD;EXOC4;CRYL1;WDFY3;PRKD 1;CDKL1;CDS2*
SOX2-OT	39/100	0.0295713170732 5519	*PCDHGB7;PCDHGB6;PCDHGB4;CTNND2;PCDH GB3;PCDHGB2;GRIK4;FMN2;NDRG2;IQCJ- SCHIP1;TRIM9;SNN;DPYSL2;BAALC;DENND*

			5A;NCAM1;GRIA3;GRIA4;CLASP2;PCDHGA8;PCDHGA7;PCDHGA6;DTNA;PCDHGA5;DSCAM;PCDHGA4;CADM2;PCDHGA3;PCDHGA2;PCDHGA1;LSAMP;QKI;PCDHGA9;PCDHGA10;PCDHGA11;PCDHGA12;RFX4;PCDHGB1;APBA2
RIC3-DT	39/100	0.02957131707325519	SPON1;PCDHGB7;PCDHGB6;MAML2;PCDHGB3;CHD7;PCDHGB2;CRMP1;TRIM9;MAP2;DPF3;SOX8;NCAM1;SRGAP3;CSMD2;GRIA3;ANKRD6;PCDHGA8;PCDHGA7;PCDHGA6;PCDHGA5;DSCAM;MUC16;PCDHGA4;PCDHGA3;PCDHGA2;PCDHGA1;QKI;PCDHGA9;PCDHGA10;ATAT1;BCAN;PCDHGA11;FCHSD2;DOK5;NOVA1;PCDHGB1;APBA2;ST6GALNAC5
SEC23A-AS1	39/100	0.02957131707325519	SYNM;FAM114A1;TSHZ3;TGFB1I1;SYNPO2;PRUNE2;CACNA1C;MYLK;PANX1;PLN;CALD1;RAB23;POTEE;POTEF;MYH11;FLNC;MGAT2;FILIP1L;TEAD1;PRKG1;RBFOX2;NDE1;AFAP1;FBXL18;ABCC9;FOXN3;GNG12;EML1;STON1-GTF2A1L;IGF2R;PALLD;KCNMA1;MYH9;MSRB3;TTLL11;MRVI1;PPP1R12B;VCL;FERMT2

Table S2. Overlapping groups of rDNA-contacting gene in initial K562 cells are co-expressed with 198 different long non-coding RNAs.

Term	Overlap	Adjusted P-value	Genes
PRICKLE2-AS3	51/100	7.26105952383235E-10	CHD9;ZBTB20;SLC9C1;SYNE1;AKAP11;ZNF407;TEAD1;PRKG1;RALGAPA1;VPS13C;ATRX;RC3H1;VPS13B;ASH1L;STON1-GTF2A1L;EML1;SETBP1;PEAK1;KCNMA1;WDFY3;BIRC6;MACF1;KMT2C;PRICKLE2;RGPD5;RGPD8;UBR1;CACNA1C;LPP;PCNX1;ATXN1;HECTD2;CALD1;EVI5;SVIL;MBD5;MON2;ERCC6L2;LNPEP;PLEKHA3;HOOK3;PHC3;MYO9A;HIPK3;FER;AGO3;NFIA;SLMAP;CCSER2;BRWD1;KIAA0825
LINC02827	49/100	7.3597740204547755E-9	KDM5A;PATJ;CHD6;TRPS1;POTED;SAMD12;PRMT8;CERS6;RALGAPA1;ZNF160;MRTFB;TBC1D9;VPS13B;ASH1L;EDAR;KIAA1217;SPOPL;LMX1B;ZNF236;SHANK2;GREB1L;RGPD6;RGPD5;RGPD8;FAM214A;TMEM241;MIPOL1;CRACR2A;ADAMTS18;NSD1;KHDC4;SLC25A21;APBB2;MARCHF6;ANKRD26;AUTS2;ANKRD30B;ANKRD30A;LRBA;DNAH14;DEFB108B;ESR1;GON4L;TTC6;KCNS3;SP3;TASOR2;NEK10;KIAA0825
GSN-AS1	46/100	2.4996563735110316E-7	MACF1;ANKRD36;KMT2C;TULP4;FMN1;ASAP1;LPP;DOCK10;STK10;SRGAP2C;AKAP13;FYCO1;ZFYVE26;DSTYK;ATXN1;SGCD;POTEJ;ZNF407;ABL2;HMCN1;MAP4;ERC1;SRGAP2;EVI5;TEAD1;SRGAP2B;KIRREL1;MBD5;ERCC6L2;DENND2B;SAMD4A;MYO5A;VPS13B;MITF;MYO9B;ASH1L;LHFPL2;TANC1;FER;NIN;PEAK1;SLMAP;CDC42EP3;BIRC6;VCL;TNRC6B
LRRC7-AS1	46/100	2.4996563735110316E-7	ADCYAP1R1;GABRB1;RTN1;CTNND2;NRXN1;KLHL32;SLC1A2;OTUD7A;ADAM22;FMN2;HTR2A;NDRG2;KIAA0513;GRM5;BRINP1;FUT9;MAP2;NCS1;CHN1;DLGAP1;NCAM1;ERC2;WASF3;OPCML;ARNT2;DTNA;CADM2;NTRK3;TMOD2;LSAMP;ANK2;SLC39A12;GRIN2B;SYN2;SNAP91;GABRG1;CNKSR2;TTLL7;DLG2;SYNJ1;APC;ADGRB3;LRRC7;PPP2R2B;ASTN1;RAPGEF4

TUB-AS1	45/100	7.5405751403 11747E-7	*NFAT5;TBC1D19;ACSS3;CUL5;PPM1L;PRUNE2;ZBTB 20;ACSM2A;SLC5A12;PEPD;TRHDE;TSPAN33;ACSM2 B;HS6ST3;CDH7;SNX29;AP5M1;KIAA1328;PLCZ1;K IF21A;THSD7A;SLC16A9;SLC17A1;RNF152;TINAG; CUBN;KL;STPG2;PDE4D;SLC2A13;WDR72;UNC5D;AR HGAP24;MOB1B;MSRA;PLCXD3;CLCN5;SYT10;RRAGD ;LRRC9;WDFY3;CNTN3;DGKI;CNTNAP5;CPEB4*
LINC027 20	44/100	2.2776424959 244053E-6	*UHRF1BP1L;CUL5;PPM1L;ZBTB20;ITPR2;LDLRAD4; FAM214A;TMEM241;HS6ST3;CDH7;KIAA1328;PLCZ1 ;ERBB4;TRPS1;FAM241A;APBB2;THSD7A;RNF152;R ALGPS2;VAV3;UNC13C;MON2;STPG2;LRBA;TBC1D9; GFRA1;SCAMP1;PRLR;ESR1;PBX1;MOB1B;INPP4B;R ABEP1;SYT10;CCNG2;LRRC9;NEK10;SPOPL;ZNF678 ;LMX1B;BRWD1;KIAA0825;DGKI;CNTNAP5*
ARHGEF7 -IT1	43/100	5.2897997550 06147E-6	*DOCK4;MAML2;PPM1L;CTTNBP2;ADAM22;ZBTB20;AK AP11;SNTG1;MAP2;SACS;NCAM1;SCAPER;MPDZ;TRI M23;ZNF462;KLF12;MBD5;TMOD2;TCF12;KIAA0232 ;IL17RD;MYO9A;PJA2;PYGO1;DNM3;ZEB1;NBEA;MM P16;SETBP1;APC;ADGRB3;PEAK1;NFIB;TTC3;RAPG EF2;WDFY3;FAT3;TCF4;CNTN3;PIK3C3;FAT4;ARHG EF7;PAFAH1B1*
MRPS30- DT	43/100	5.2897997550 06147E-6	*PTPRT;CLSTN2;KCNE4;LDLRAD3;AFF3;FAM214A;TM EM241;RERG;SLC7A2;TMEM25;ERBB4;TRPS1;FAM24 1A;SLC39A6;POTED;APBB2;RALGPS2;VAV3;KDM4B; CERS6;SIAH2;LRBA;MRTFB;CYBRD1;TBC1D9;ELP2; GFRA1;PRLR;ESR1;PBX1;MED13L;RABEP1;TSPAN13 ;NAT1;TTC6;KIF16B;BCL2;NEK10;SPOPL;LMX1B;B MPR1B;FSIP1;FGF10*
PGR-AS1	43/100	5.2897997550 06147E-6	*CLSTN2;ZFAND4;SLC40A1;GREB1L;PIK3R3;LDLRAD 4;EFCAB6;AFF3;FAM214A;GALNT10;TMEM241;RERG ;TMEM25;ADAMTS19;ERBB4;TRPS1;NRIP1;FAM241A ;SPIN1;ST8SIA6;APBB2;RALGPS2;VAV3;ANKRD26; KDM4B;ANKRD30B;EYA2;SIAH2;LRBA;GREB1;MRTFB ;TBC1D9;GFRA1;PRLR;ESR1;PBX1;DCDC1;INPP4B; RABEP1;NAT1;NEK10;SPOPL;LMX1B*
LINC004 72	42/100	1.3282243356 481516E-5	*CYFIP2;NFAT5;PATJ;PRKAA2;CUL5;STXBP4;KMT2C ;RGPD6;ZBTB20;RGPD5;RGPD8;EFCAB6;SYNE2;SYN E1;KIAA1328;ERBB4;ZNF407;THSD7A;RNF152;ZNF 124;ANKRD26;MBD5;MON2;ARHGEF12;STPG2;ERCC6 L2;LRBA;DNAH14;VPS13B;LNPEP;ASH1L;PPP2R3A; PHC3;MYO9A;MOB1B;ZNF717;SETBP1;WDFY3;UTRN; BRWD1;KIAA0825;DOCK1*
LINC016 51	42/100	1.3282243356 481516E-5	*CRB1;GALNT13;PID1;PLPPR1;PHLPP1;CTTNBP2;ME GF11;NRXN1;PCDH15;ADAM22;GRIK4;GRIK2;TRIM9 ;MAP2;CDH20;DNER;GDAP1L1;TNR;NCAM1;KIF21B; CSMD3;SOX6;LRRC4C;CACNG2;EPHB1;GRIA4;RFTN2 ;GRID2;DSCAM;SPHKAP;CADM2;TCF12;LSAMP;LHFP L3;SEZ6L;MYT1;FCHSD2;ADGRB3;SMOC1;SCG3;UNC 79;ASTN1*
SYNE1- AS1	42/100	1.3282243356 481516E-5	*TBC1D19;DOCK4;PRKAA2;STXBP4;CHD9;GLIS3;PRI CKLE2;ZBTB20;SYNE2;SYNE1;PTPRG;TTC28;ARHGA P42;SNX29;BBS9;DIP2C;TEAD1;ZNF124;TRIM23;M BD5;ARHGEF12;ERCC6L2;SLC2A13;PDE4D;PPP2R3A ;CDC42BPA;MYO9A;ARHGAP24;PJA2;HIPK3;FER;AR HGAP31;SNRK;LATS2;COL4A3;CCSER2;RAPGEF2;WD FY3;FAT4;UTRN;PTPN4;DOCK1*
LINC010 87	41/100	3.2045134563 67577E-5	*PATJ;ANKRD36;TULP4;LDLRAD4;FAM214A;MIPOL1; HECTD2;POTEJ;TRPS1;PSD3;NRIP1;POTED;POTEG; ANKRD26;MON2;ADGRV1;ANKRD30B;ANKRD30A;LRBA*

			;DNAH14;OR1L6;MRTFB;TBC1D9;VPS13B;PLXDC2;P RLR;LRP1B;PBX1;VMP1;INPP4B;TTC6;CCNG2;AKAP 9;BCL2;NEK10;SPOPL;ZNF678;BRWD1;FSIP1;KIAA 0825;ANKRD36B
LINC019 06	41/100	3.2045134563 67577E-5	PATJ;CLSTN2;ANKRD36;KMT2C;GREB1L;LDLRAD4;S LC9C1;POTEJ;TRPS1;ZNF407;POTED;APBB2;ANKRD 26;MON2;MBD5;ANKRD30B;ANKRD30A;LRBA;DNAH14 ;MUC19;OR1L6;VPS13B;ASH1L;DEFB108B;ESR1;PH C3;LRP1B;PBX1;INPP4B;ZNF717;TTC6;AKAP9;TAS OR2;SPOPL;ZNF678;BIRC6;BRWD1;ZNF236;KIAA08 25;ANKRD36B;SHANK2
PRICKLE 2-AS1	41/100	3.2045134563 67577E-5	RABGAP1;PRUNE2;PRICKLE2;CACNA1C;LPP;FYCO1; ATXN1;AKAP11;MPRIP;CALD1;ABL1;MAP4;DIP2C;M PDZ;TEAD1;PRKG1;SVIL;STARD13;NEGR1;AFAP1;S HISAL1;ABCC9;FOXN3;STON1- GTF2A1L;EML1;PJA2;FER;ARHGAP31;ZEB1;SETBP1 ;APC;PEAK1;SLMAP;KCNMA1;CCSER2;WDFY3;TTLL1 1;PPP1R12B;PDZRN3;VCL;PAFAH1B1
SLC14A2 -AS1	41/100	3.2045134563 67577E-5	SLC44A5;NFAT5;TBC1D19;ACSS3;CUL5;PPM1L;ZDH HC21;NYAP2;PPP1R9A;CDH7;HS6ST3;MTMR7;MIPOL 1;KIAA1328;PLCZ1;TOGARAM1;THSD7A;RNF152;SL C15A5;ZNF124;UNC13C;MBD5;STPG2;FANCM;RALGA PA1;PDE4D;DNAH14;POU6F2;EBF2;HOOK3;FOXP2;H IPK3;MOB1B;ZNF717;TRAPPC6B;SYT10;LRRC9;ZNF 678;ATP6V0D2;DGKI;CNTNAP5
LINC006 89	40/100	6.0942217326 211904E-5	CRB1;GALNT13;PID1;DGKB;CTTNBP2;MEGF11;LUZP 2;PCDH15;ADAM22;GRIK4;GRIK2;TRIM9;MAP2;CDH 20;DNER;GDAP1L1;PHACTR3;LRIG1;TNR;GSG1L;NC AM1;FYN;KIF21B;CSMD3;SOX6;EPHB1;GRIA4;RFTN 2;GRID2;DSCAM;CADM2;TCF12;LSAMP;LHFPL3;ATA T1;FCHSD2;SMOC1;UST;SCG3;FGF12
LINC004 98	40/100	6.0942217326 211904E-5	CLSTN2;ANKRD36;KMT2C;TULP4;GREB1L;ITPR2;LD LRAD4;ERBB4;POTEJ;TRPS1;ZNF407;NSD1;ST8SIA 6;CEP192;APBB2;ANKS1B;ANKRD26;ANKRD30B;ANK RD30A;LRBA;DNAH14;VPS13B;TBC1D9;ASH1L;DEFB 108B;ESR1;PBX1;INPP4B;GON4L;RABEP1;TTC6;TA SOR2;SPOPL;ZNF678;BIRC6;BRWD1;ZNF236;KIAA0 825;ANKRD36B;SHANK2
CYP1B1- AS1	40/100	6.0942217326 211904E-5	NOTCH2;CCDC186;SGMS1;SEL1L;RGPD8;LPP;RGPD4 ;FYCO1;EFR3A;SCAF8;ATXN1;CALD1;HLCS;ZNF407 ;HIVEP1;PHACTR2;PDLIM5;ABCC4;SVIL;ZFHX3;IL 1R1;BICRAL;DENND4C;LNPEP;ASH1L;PLXDC2;STON 1- GTF2A1L;HIPK3;PARD3B;KIAA1217;CRISPLD2;ZNF 615;ZNF613;ROR1;FAT4;UTRN;VCL;JCAD;FKBP5;S NTB2
MYCBP2- AS1	40/100	6.0942217326 211904E-5	ZNF573;ANKRD17;MACF1;SETD2;INO80D;ROCK1;CH D9;ZNF292;KMT2C;LTN1;BAZ2B;ZC3HAV1;PRDM10; PCNX1;NIPBL;AKAP11;BTAF1;HERC1;BPTF;USP24; SPEN;ERCC6L2;VPS13C;MGA;TRAPPC10;ATRX;YLPM 1;RC3H1;VPS13B;ASH1L;GAPVD1;ARID1B;RC3H2;Z ZEF1;NIN;NCOR1;AGO3;RFX7;BIRC6;TNRC6B
NMBR- AS1	40/100	6.0942217326 211904E-5	FTO;TPH2;ATP8A2;MAST4;KCNE4;GRIK1;LRP2;FRY ;CELSR2;PRSS23;RERG;SLC7A2;FAM107B;PHF21B; TMEM25;ADAM29;DACH1;ERBB4;SUSD4;MALRD1;PRK ACB;EDIL3;PCDH9;NEGR1;SIAH3;SEMA6D;MAGI2;C YBRD1;ESR1;GABRG2;DCDC1;DCLK1;MED13L;CACNB 2;SLCO3A1;KCNS3;CDHR3;LMX1B;FGF12;FGF10
PRICKLE	40/100	6.0942217326	NFAT5;INO80D;ANKRD36;CHD9;KMT2C;RGPD6;PRIC

2-AS2		211904E-5	*KLE2;ZBTB20;RGPD5;ZNF518A;RGPD8;BAZ2B;LPP; SYNE1;ATXN1;HECTD2;ZNF407;ZNF124;ANKRD36C; MBD5;MON2;RALGAPA1;ANKRD30A;ERCC6L2;VPS13C ;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;VMP1;FER;AG O3;WDFY3;BIRC6;UTRN;BRWD1;KIAA0825;ANKRD36 B;TNRC6B*
CXXC4-AS1	40/100	6.0942217326 211904E-5	*GALNT13;DGKB;CTNND2;NRXN1;PCDH15;ADAM22;GR IK4;GRIK2;NALCN;DPP6;MAP2;CDH20;DNER;TNR;N CAM1;NCAM2;LRRC4C;CACNG2;GPR158;TRIM23;GRI A4;RFTN2;GRID2;DSCAM;KCND2;CADM2;TMOD2;TCF 12;LSAMP;LHFPL3;SEZ6L;MYT1;DNM3;ZEB1;APC;A DGRB3;CNTN1;SCG3;UNC79;ASTN1*
FAM198B -AS1	40/100	6.0942217326 211904E-5	*UHRF1BP1L;SEL1L;LDLRAD4;AFF3;FAM214A;RERG; PRRC1;TRPS1;FAM241A;TRAPPC11;TOGARAM1;ST8S IA6;APBB2;FLNB;ARFGEF3;RALGPS2;TTC37;KDM4B ;CERS6;LRBA;MRTFB;TBC1D9;GFRA1;ASH1L;PRLR; ESR1;PBX1;CDYL2;MED13L;INPP4B;RABEP1;TTC6; KIF16B;CCNG2;NEK10;SPOPL;LMX1B;DHX29;BMPR1 B;FSIP1*
RERG-AS1	40/100	6.0942217326 211904E-5	*PATJ;TBC1D19;ACSS3;PRKAA2;CUL5;ANKRD36;ZBT B20;EPB41L4A;KIAA1328;PLCZ1;ZNF407;POTED;T HSD7A;RNF152;ANKRD26;MON2;MBD5;STPG2;ANKRD 30B;ANKRD30A;DNAH14;OR1L6;VPS13B;DEFB108B; PHC3;MYO9A;LRP1B;MOB1B;INPP4B;TBC1D1;ZNF71 7;RCAN2;SYT10;ERP27;WDFY3;ATP6V0D2;KIAA082 5;DGKI;ANKRD36B;CPEB4*
SFTPD-AS1	40/100	6.0942217326 211904E-5	*NFAT5;ANKRD36;CHD9;RGPD6;ZBTB20;RGPD5;RORA ;ZDHHC21;BAZ2B;PPP1R9A;SNX30;SLC9C1;SYNE1; PTAR1;MACROD2;SCAI;ANKRD36C;DNAH11;MON2;MB D5;WSB1;RALGAPA1;VPS13C;MTUS1;PLEKHA3;HOOK 3;BTBD9;PTPN13;CDC42BPA;PHC3;KCNQ3;GSAP;ZN F780B;FAT4;BRWD1;RAPGEF5;PTPN4;KIAA0825;AN KRD36B;RBMS3*
LINC025 52	39/100	1.5171570268 143067E-4	*SHC4;CRB1;PHLPP1;XYLT1;FMN1;PTPRJ;AKAP6;FC RLA;STK10;SDCBP;SGCD;UBL3;GNG2;SCFD2;LRRTM 4;CHCHD6;GNG7;ZNF106;PRAME;HMCN1;STK32A;DI SC1;SOX5;PKNOX2;MYEF2;EYA1;MYO10;PCDH7;MOK ;MYO5A;MITF;NSG1;S100B;CORO2B;IGSF11;NELL1 ;NRG3;MDGA2;CNIH3*
SRGAP3-AS1	39/100	1.5171570268 143067E-4	*ADCYAP1R1;GALNT13;RTN1;CTNND2;NRXN1;KLHL32 ;ADAM22;GRIK4;NALCN;NPAS3;NKAIN3;MAP2;CDH2 0;LRIG1;TNR;DLGAP1;NCAM1;SRGAP3;LRRC4C;WAS F3;GRIA4;RFTN2;ARNT2;GRID2;DSCAM;KCND2;CAD M2;NTRK3;TMOD2;TCF12;LSAMP;MAPK8IP1;DNM3;A PC;ADGRB3;PTPRA;TBC1D5;PPP2R2B;ASTN1*
CHL1-AS1	39/100	1.5171570268 143067E-4	*SEMA5A;SHC4;MTPN;NLGN1;PHLPP1;MEGF10;PTPRJ ;SLC35F1;FMN1;AKAP6;SDCBP;DSTYK;NKAIN3;UBL 3;GNG7;ANKFY1;ITGB8;ZNF106;HMCN1;DIP2C;STK 32A;SOX5;ARNT2;MYEF2;TMEM178B;MYO10;KAZN;M YO5A;MITF;ANK2;S100B;CORO2B;IGSF11;NELL1;N RG3;TBC1D5;VPS41;CNIH3;CREB5*
ADAMTS9 -AS2	39/100	1.5171570268 143067E-4	*NRP1;ENPEP;TBC1D19;FLT1;PRKAA2;STXBP4;ARHG EF28;CEP120;PRUNE2;ZBTB20;RORA;LDB2;SLC8A1 ;SYNE1;TTC28;PTPRG;ARHGAP42;EPB41L4A;FCHO2 ;CEP112;MBD5;ARHGEF12;INSR;ITGA1;CRIM1;LNP EP;ANO6;MYO9A;PJA2;HIPK3;ZNF33B;SNRK;SETBP 1;WDFY3;ALPK2;FAT4;ZNF611;UTRN;RBMS3*
WDFY3-AS1	39/100	1.5171570268 143067E-4	*ZNF573;ANKRD17;DDX6;UHRF1BP1L;CHD9;KMT2C;L TN1;ZBTB20;RGPD8;UBR1;RGPD4;PCNX1;ATXN1;AK*

			AP11;HERC1;ZNF407;HECTD4;TRAPPC11;TOGARAM1;MBD5;MON2;ARHGEF12;RALGAPA1;ERCC6L2;LRBA;DENND4C;VPS13D;ATRX;VPS13B;ASH1L;PHC3;MYO9A;RC3H2;HIPK3;FER;WDFY3;BIRC6;ZNF236;KIAA0825
LINC02520	38/100	3.527775382613342E-4	DGKG;CRB1;GALNT13;PID1;PLPPR1;MEGF11;LAMA1;ADAM22;GRIK4;GRIK2;TRIM9;RELN;MAP2;ADAMTS18;DNER;GDAP1L1;TNR;NCAM1;KIF21B;CSMD3;NCAM2;CACNG2;EPHB1;GPR158;WASF3;GRIA4;DSCAM;CADM2;TCF12;LHFPL3;SEZ6L;MYT1;HS3ST4;FCHSD2;ZEB1;SMOC1;SCG3;UNC79
PPP3CB-AS1	38/100	3.527775382613342E-4	STX12;GALNT13;DOCK3;RABGAP1;PHLPP1;ATP8A1;KLHL32;GRIK4;BAZ2B;PPP1R9A;HIRA;CDH20;HECTD4;PHACTR3;LRIG1;ANKFY1;EPC2;SRGAP3;SCAPER;RALGPS1;WASF3;ATP9A;RFTN2;NTRK2;SLC15A2;NEK4;VPS13D;ARAP2;FAM189A2;YLPM1;ATAT1;TOM1L2;TAOK3;TBC1D5;RUFY2;UST;ZMYND11;ASB3
PACRG-AS2	38/100	3.527775382613342E-4	NFAT5;ACSS3;CUL5;PDE1C;PPM1L;ZBTB20;TRHDE;CDH7;HS6ST3;AP5M1;KIAA1328;PLCZ1;TRIM2;ZNF208;KIF21A;THSD7A;STXBP6;RNF152;UNC13C;FYB2;STPG2;ABCA5;PDE4D;SLC2A13;ADAM32;SCAMP1;MOB1B;INPP4B;TBC1D1;LRFN5;TMEM116;SYT10;LRRC9;ERP27;ATP6V0D2;DGKI;CNTNAP5;ZNF431
SLC8A1-AS1	38/100	3.527775382613342E-4	MARCHF1;CHD9;PRUNE2;RNF38;PRICKLE2;ZBTB20;CACNA1C;FRY;LPP;SLC8A1;SYNE1;ATXN1;AKAP11;CALD1;TSPAN2;PGM5;TEAD1;PRKG1;MBD5;ERCC6L2;PDE4D;TPM1;LNPEP;FOXN3;STON1-GTF2A1L;EML1;MYO9A;PJA2;HIPK3;FER;ZEB1;NBEA;SETBP1;SLMAP;KCNMA1;CCSER2;WDFY3;PPP1R12B
MYO16-AS2	38/100	3.527775382613342E-4	NFAT5;ACSS3;MARCHF1;CUL5;PPM1L;ZBTB20;CDH7;HS6ST3;FGD4;AP5M1;KIAA1328;PLCZ1;TRIM2;ZNF208;KIF21A;DPH6;THSD7A;RNF152;UNC13C;FYB2;STPG2;ABCA5;ERCC6L2;PDE4D;SLC2A13;ADAM32;SCAMP1;MOB1B;INPP4B;LRFN5;SYT10;LRRC9;ERP27;ATP6V0D2;DGKI;CNTNAP5;ZNF431;CPEB4
TMEM26-AS1	38/100	3.527775382613342E-4	PTPRT;CLSTN2;ZFAND4;LDLRAD3;AFF3;FAM214A;RERG;TMEM25;HHAT;TRPS1;FAM241A;POTED;PIEZO2;SLC39A6;ST8SIA6;FLNB;KDM4B;LRBA;GREB1;MRTFB;CYBRD1;TBC1D9;ELP2;GFRA1;PRLR;ESR1;DCDC1;CDYL2;INPP4B;RABEP1;TTC6;KIF16B;CCNG2;BCL2;NEK10;SPOPL;LMX1B;BMPR1B
NAV2-AS2	38/100	3.527775382613342E-4	OCA2;DOCK9;FMN1;ATP10A;AMBRA1;ZFYVE1;TRPM1;FYCO1;ZFYVE26;DSTYK;UBL3;SGCD;MPRIP;KIF13A;ABL1;ANKFY1;NPHP4;ZNF106;ERC1;STK32A;DIP2C;TEAD1;ARHGEF11;MYEF2;MYO10;DENND2B;SAMD4A;MYO5A;CABLES1;MITF;NAV2;GPR137B;ITPKB;TANC1;FER;RAB38;ST6GALNAC3;ITGA9
LINC00862	37/100	7.054326517377347E-4	LPGAT1;WDR26;CLSTN2;ANKRD36;KMT2C;GREB1L;LDLRAD4;MIPOL1;ODR4;KIAA1328;ZNF407;EYS;RALGPS2;ANKRD36C;ANKRD26;ANKRD30B;ANKRD30A;SLX4IP;DNAH14;RC3H1;VPS13B;ASH1L;DEFB108B;ESR1;PBX1;INPP4B;GON4L;TTC6;TASOR2;RAB3GAP2;ZNF678;BIRC6;BRWD1;ZNF236;KIAA0825;ANKRD36B;SHANK2
LINC02571	37/100	7.054326517377347E-4	PATJ;PDXDC1;GREB1L;AFF3;DUX4;FAM214A;TMEM241;MIPOL1;TMEM25;ERBB4;TRPS1;POTED;KIAA0319L;ARFGEF3;POTEC;CERS6;ANKRD30A;LRBA;MRTFB;TBC1D9;GFRA1;ASH1L;TC2N;PRLR;ESR1;PBX1;CD

			YL2;RABEP1;TSPAN13;TTC6;DOP1B;CCNG2;MYO5C; NEK10;SPOPL;LMX1B;FSIP1
LINC015 38	37/100	7.0543265173 77347E-4	NFAT5;ACSS3;MARCHF1;CUL5;PDE1C;PPM1L;ZBTB2 0;MSI2;CDH7;HS6ST3;AP5M1;KIAA1328;PLCZ1;TR IM2;ZNF208;KIF21A;THSD7A;RNF152;UNC13C;STP G2;ABCA5;ERCC6L2;PDE4D;SLC2A13;ADAM32;SCAM P1;MOB1B;INPP4B;LRFN5;GNAQ;SYT10;LRRC9;ERP 27;ATP6V0D2;DGKI;CNTNAP5;ZNF431
LINC018 01	37/100	7.0543265173 77347E-4	ZNF573;ANKRD17;MACF1;ZNF292;IREB2;CHD6;BAZ 2A;AFF3;SCAF8;HERC1;PPIP5K2;TTC21B;NSD1;MY B;TOGARAM1;EPC2;ST8SIA6;BPTF;USP24;CREBBP; CNOT6L;ITGA4;BICRAL;LRBA;DENND4C;TBC1D9;VP S13B;ASH1L;MYO9A;FLI1;MED13L;ZNF33B;ZNF718 ;ELF2;BCL2;SPOPL;ZNF611
SHANK2- AS3	37/100	7.0543265173 77347E-4	KMT2E;INO80D;ANKRD36;KMT2C;GREB1L;ZBTB20;L LDLRAD4;BAZ2B;KIAA1328;ZNF407;NSD1;HIVEP1;A NKRD26;MBD5;ANKRD30B;ANKRD30A;LRBA;MGA;DNA H14;OR1L6;RC3H1;VPS13B;ASH1L;DEFB108B;PHC3 ;ZNF717;TTC6;TASOR2;ZNF678;BIRC6;UTRN;BRWD 1;ZNF236;KIAA0825;ANKRD36B;SHANK2;TNRC6B
ZNF32- AS3	37/100	7.0543265173 77347E-4	GALNT13;NRXN1;ADAM22;GRIK4;MAP2;CDH20;LRIG 1;TNR;DLGAP1;NCAM1;SRGAP3;NCAM2;LRRC4C;EPH B1;WASF3;TRIM23;GRIA4;RFTN2;GRID2;DSCAM;SP HKAP;KCND2;CADM2;NTRK3;TMOD2;TCF12;LHFPL3; DNM3;ATAT1;ZEB1;FCHSD2;APC;ADGRB3;RUFY2;TT C3;ZMYND11;ASTN1
INHBA- AS1	37/100	7.0543265173 77347E-4	NLGN1;RTN1;KCNC1;MYT1L;MEGF11;NTM;NRXN1;DI RAS2;KLHL32;OTUD7A;ADAM22;GRIK2;HTR2A;SLC6 A1;GRM5;BRINP1;TNR;CACNG2;ANKS1B;TRIM23;RG S7;GRIA4;OPCML;DSCAM;TMOD2;SYT16;FAM219A;S EZ6L;GRIN2B;SNAP91;DNM3;SYNJ1;APC;ADGRB3;M APRE2;UNC79;RAPGEF4
VWC2L- IT1	37/100	7.0543265173 77347E-4	DGKG;GRIA1;GABRB1;GALNT13;RTN1;KCNC1;MEGF1 1;NRXN1;KLHL32;ADAM22;SLC35F1;GRIK2;SLC6A1 ;GRM5;MAP2;SNTG1;GDAP1L1;TNR;LRRC4C;CACNG2 ;GPR158;GRIA4;OPCML;CADM2;TMOD2;FAM219A;LH FPL3;SEZ6L;SNAP91;EPN2;DNM3;SYNJ1;APC;ADGR B3;PPP2R2B;UNC79;ASTN1
UST-AS1	37/100	7.0543265173 77347E-4	ZNF573;MACF1;NFAT5;PPM1L;CHD9;KMT2C;WDR41; RGPD6;ZBTB20;RGPD5;RGPD8;BAZ2B;SLC9C1;PLCZ 1;ZNF407;SCAPER;EVI5;ZNF462;MBD5;ST6GAL2;E RCC6L2;VPS13D;OR1L6;HOOK3;PHC3;PYGO1;MOB1B ;FER;PDP2;UST;LPCAT2;CCSER2;ZNF780B;PTPN4; DGKI;ZNF431;TNRC6B
OBI1- AS1	37/100	7.0543265173 77347E-4	ADCYAP1R1;GALNT13;PHLPP1;HEPACAM;LUZP2;CTN ND2;NRXN1;KLHL32;PCDH15;ADAM22;GRIK4;FMN2; NDRG2;NKAIN3;AKAP11;CDH20;FUT9;ANKFY1;NCAM 1;KIF21B;KCNN3;WASF3;RFTN2;NTRK2;ARNT2;KCN D2;CADM2;TMOD2;TCF12;LSAMP;CCDC88A;FCHSD2; APC;ADGRB3;PPP2R2B;ARHGEF7;ASB3
PTPRG- AS1	37/100	7.0543265173 77347E-4	IPO11;DOCK4;CUL5;STXBP4;ZBTB20;RGPD8;UBR1; PTPRG;ARHGAP42;SPRED1;ATXN1;AKAP11;ZNF449; BBS9;TOGARAM1;EPC2;EVI5;TEAD1;TRIM23;TTC37 ;MBD5;ARHGEF12;ERCC6L2;ERBIN;SMAD5;MYO9A;P JA2;MOSMO;FER;SNRK;TBC1D5;PEAK1;HECW2;RAPG EF2;WDFY3;FAT4;CFAP97
FGF10- AS1	37/100	7.0543265173 77347E-4	PTPRT;CLSTN2;MAST4;KCNE4;GRIK1;LRP2;AFF3;P RSS23;FAM214A;RERG;GLI3;SLC7A2;TMEM25;DACH 1;ERBB4;TRPS1;FAM241A;PIEZO2;SLC39A6;ENPP1

			;ST8SIA6;MALRD1;PRKACB;EDIL3;AMFR;CYBRD1;TBC1D9;ELP2;ESR1;DCDC1;MED13L;CACNB2;RABEP1;KIF16B;LMX1B;BMPR1B;FGF10
LRP1-AS	37/100	7.0543265173 77347E-4	*NOTCH2;UHRF1BP1L;DOCK4;TRIO;CHD9;ROCK2;KMT2C;RGPD8;ANTXR1;AKAP13;PCNX1;ATXN1;AKAP11;HERC1;ZNF407;HIVEP1;EVI5;TEAD1;CREBBP;ERCC6L2;DENND4C;EBF1;AFAP1;VPS13B;FOXN3;ASH1L;PLXDC2;ZZEF1;FER;VCAN;PEAK1;CDH11;WDFY3;BIRC6;FAT4;ZNF236;FBN1*
FRMD6-AS1	37/100	7.0543265173 77347E-4	*CHD6;TULP4;GREB1L;LDLRAD3;DUX4;GLI3;MIPOL1;RPS6KA5;HECTD2;TRPS1;ZNF407;POTED;ABL2;TOGARAM1;POTEC;SUPT16H;ANKRD26;FANCM;ANKRD30A;DNAH14;MRTFB;EXOC6B;TBC1D9;ASH1L;MCC;PRLR;ESR1;DCDC1;KTN1;FRMD6;GON4L;RABEP1;TTC6;NEK10;BRWD1;ZNF236;HDGFL3*
LINC00504	36/100	0.0015793057 335155385	*PTPRT;IGSF3;TULP4;LDLRAD3;FMN1;AFF3;FAM214A;TMEM241;GLI3;FCRLA;HHAT;TRPS1;FAM241A;SLC39A6;ABL2;ST8SIA6;IARS2;RALGPS2;VAV3;CERS6;MRTFB;TBC1D9;ELP2;MITF;GFRA1;PRLR;ESR1;GPR137B;INPP4B;RABEP1;KIF16B;SPOPL;ENTHD1;LMX1B;BMPR1B;FSIP1*
ANKRD62P1-PARP4P3	36/100	0.0015793057 335155385	*CRB1;ADCYAP1R1;GALNT13;LUZP2;CTNND2;PCDH15;GRIK3;GRIK4;NDRG2;CDH20;TRPS1;LRIG1;MARCHF8;DLGAP1;NCAM1;KCNN3;CSMD2;GRIA4;RFTN2;NTRK2;HFM1;DSCAM;SPHKAP;KCND2;CADM2;TCF12;DNM3;TNRC6C;FRMD5;FCHSD2;NFIA;SMOC1;ADGRB1;TTC3;PWWP3A;ZMYND11*
PKP4-AS1	36/100	0.0015793057 335155385	*ANKRD17;NFAT5;PATJ;INO80D;STXBP4;ZNF292;KMT2C;TULP4;RGPD6;RGPD5;RGPD8;BAZ2B;SYNE2;RGPD4;SCAF8;ZNF407;NSD1;SAMD12;ZNF124;BPTF;MBD5;ARHGEF12;LRBA;VPS13B;ASH1L;PHC3;MYO9A;AKAP9;WDPCP;WDFY3;STRN;BIRC6;ZNF611;ZNF236;DOCK1;CSNK1G1*
FRMPD3-AS1	36/100	0.0015793057 335155385	*ADCYAP1R1;GALNT13;LUZP2;CTNND2;NRXN1;ADAM22;GRIK4;FMN2;GRIK2;NDRG2;TRIM9;CDH20;MAP2;DNER;LRIG1;NCAM1;KCNN3;LRRC4C;EPHB1;WASF3;GPR158;GRIA4;RFTN2;NTRK2;GRID2;DSCAM;CADM2;NTRK3;TMOD2;TCF12;LSAMP;ZEB1;APC;ADGRB3;SCG3;ASTN1*
SLC6A1-AS1	36/100	0.0015793057 335155385	*CRB1;PID1;GALNT13;PLPPR1;PHLPP1;MEGF11;NRXN1;ADAM22;GRIK4;GRIK2;NDRG2;SLC6A1;TRIM9;MAP2;CDH20;DNER;TNR;NCAM1;WASF3;GRIA4;RFTN2;DSCAM;CADM2;NTRK3;TMOD2;TCF12;LSAMP;LHFPL3;ATP2B2;KLF15;SLC25A18;ZEB1;APC;ADGRB3;SMOC1;ASTN1*
SHANK2-AS2	36/100	0.0015793057 335155385	*PATJ;INO80D;ANKRD36;KMT2C;GREB1L;ZBTB20;LDLRAD4;BAZ2B;DUX4;KIAA1328;ZNF407;NSD1;POTEC;ANKRD26;MBD5;ANKRD30B;ANKRD30A;LRBA;DNAH14;OR1L6;RC3H1;VPS13B;ASH1L;DEFB108B;PHC3;ZNF717;TTC6;TASOR2;ZNF678;BIRC6;BRWD1;ZNF236;KIAA0825;ANKRD36B;SHANK2;TNRC6B*
OIP5-AS1	36/100	0.0015793057 335155385	*ZNF573;INO80D;CHD9;ZNF292;CELF2;IREB2;UBE3A;UBR1;PTAR1;PCNX1;BTAF1;HERC1;TRPM7;SCAI;S100PBP;BPTF;USP8;AQR;PRKCB;ERCC6L2;VPS13C;MGA;ATRX;RC3H1;INO80;FAM126B;MYO9A;RC3H2;PIAS1;CCDC88A;AGO3;KANSL1;RFX7;GNAQ;ZNF236;TNRC6B*
CLSTN2-AS1	36/100	0.0015793057 335155385	*KMT2E;CLSTN2;ANKRD36;KMT2C;ITPR2;LDLRAD4;BAZ2B;KIAA1328;POTEJ;ZNF407;NSD1;CEP192;ANK*

			S1B;ANKRD26;ANKRD30B;ANKRD30A;LRBA;MGA;DNAH14;VPS13B;ASH1L;DEFB108B;PHC3;PBX1;INPP4B;TTC6;TASOR2;ZNF678;BIRC6;UTRN;BRWD1;ZNF236;KIAA0825;ANKRD36B;SHANK2;TNRC6B
PPP1R12A-AS1	36/100	0.0015793057335155385	*RABGAP1;ROCK1;PPM1L;PRUNE2;RNF38;PRICKLE2;CACNA1C;UBR1;LPP;FYCO1;CALD1;HECTD4;SPOP;TSPAN2;PGM5;SCAPER;TEAD1;SVIL;MYOCD;ERCC6L2;FBXL17;FOXN3;STON1-GTF2A1L;EML1;PJA2;TOM1L2;CLIP1;SMTN;SETBP1;SLMAP;KCNMA1;CCSER2;PPP1R12B;ZMYND11;ASB2;VCL*
LINC00305	35/100	0.0029969704005812603	*ZNF397;ATP8A2;KDM1B;SYCP1;PIGN;DNAH5;PLD5;HTR2C;FHIT;ABCC12;ADAMTSL1;TTR;ZSCAN30;ERBB4;KIF13A;ZNF648;SLC39A6;RPRD1A;ZNF385D;PDE6A;TRPM3;OR4C46;NTNG1;WWOX;KCNH5;SLC13A4;GALNT1;ABCA4;ELP2;TRAPPC8;RAB27B;GABRG3;LMX1A;NAT1;GALNTL6*
LINC00839	35/100	0.0029969704005812603	*GALNT14;ENPEP;NLGN1;ANKRD33B;MAML2;PLPPR5;SLC35F1;SRGAP2C;MXI1;ENPP3;SOX6;DIP2C;SRGAP2;GPR156;SRGAP2B;ANKRD6;IKBIP;LINGO1;KIRREL1;EGLN3;VCAM1;KSR1;CD70;HPCAL1;KAZN;FRMD4A;HSPA12A;SORCS3;IGSF11;MYO3A;SPIRE1;ALPK2;RGL1;COPS8;CHST3*
LINC01344	35/100	0.0029969704005812603	*PATJ;GREB1L;DUX4;FAM214A;MIPOL1;CYP4Z1;HHAT;ODR4;ERBB4;TRPS1;ZNF648;PSD3;POTED;ST8SIA6;POTEC;RALGPS2;ANKRD26;ANKRD30A;DNAH14;COG2;MRTFB;TBC1D9;ASH1L;PRLR;ESR1;DCDC1;LRP1B;RABEP1;NAT1;MYO3B;TTC6;NEK10;SPOPL;ATF6;KIAA0825*
LINC01761	35/100	0.0029969704005812603	*KDM5A;CLSTN2;ANKRD36;KMT2C;ITPR2;LDLRAD4;KIAA1328;POTEJ;ZNF407;NSD1;HIVEP1;CEP192;ANKS1B;ANKRD26;ANKRD30B;ANKRD30A;MGA;DNAH14;VPS13B;ASH1L;DEFB108B;ESR1;PBX1;INPP4B;TTC6;TASOR2;ZNF678;BIRC6;UTRN;BRWD1;ZNF236;KIAA0825;ANKRD36B;SHANK2;TNRC6B*
LINC01741	35/100	0.0029969704005812603	*DGKG;CRB1;GALNT13;PID1;PLPPR1;DGKB;MEGF11;GRIK4;SLC35F1;GRIK2;TRIM9;MAP2;RASGEF1C;GDAP1L1;DNER;TNR;KIF21B;CSMD3;SOX6;LRRC4C;CACNG2;EPHB1;DLGAP2;GPR158;GRIA4;CA10;DSCAM;TCF12;LHFPL3;EPN2;FCHSD2;SMOC1;UST;TOX;FGF12*
LINC02115	35/100	0.0029969704005812603	*FTO;ACSS3;KCNE4;RAP1GDS1;GRIK1;LRP2;AFF3;FAM107B;CDH7;PAK1;DACH1;ZSWIM6;MALRD1;PRKACB;STK32B;EDIL3;PACRG;SIAH3;AMFR;CYBRD1;SCAMP1;ESR1;CDYL2;MED13L;MOB1B;CACNB2;TBC1D1;BCL2;CDHR3;BMP2K;ERP27;BMPR1B;ATP6V0D2;FGF12;FGF10*
LINC00499	35/100	0.0029969704005812603	*GRIA1;ADCYAP1R1;RTN1;HEPACAM;CTNND2;NRXN1;KLHL32;SLC1A2;AKAP6;FMN2;NDRG2;CDH20;FUT9;CHN1;DLGAP1;NCAM1;KCNN3;ERC2;WASF3;RFTN2;ARNT2;NTRK2;TMOD2;LSAMP;ANK2;SLC39A12;CORO2B;GABRG1;ETNPPL;TAFA5;NRG3;APC;PPP2R2B;APBA2;RAPGEF4*
GPC6-AS2	35/100	0.0029969704005812603	*ZNF891;NFAT5;INO80D;CUL5;ANKRD36;CHD9;ZNF292;ZBTB20;LPP;ACTR3C;PLCZ1;RNF152;GPC6;ZNF124;ANKRD36C;MBD5;STPG2;VPS13C;PDE4D;FNDC3B;RC3H1;LNPEP;PLEKHA3;PHC3;MOB1B;VMP1;ZNF717;AGO3;SYT10;WDPCP;ZNF780B;BRWD1;KIAA0825;DGKI;ANKRD36B*

AGBL4-IT1	35/100	0.0029969704005812603	*ZNF891;INO80D;ANKRD36;STXBP4;KMT2C;DNAH6;RGPD6;ZNF518A;RGPD5;EFCAB6;SLC9C1;PTAR1;ZNF407;ANKRD36C;ANKRD26;DNAH11;MON2;MBD5;ANKRD30A;VPS13C;DNAH14;RANBP17;OR1L6;RFX3;RC3H1;VPS13B;PLEKHA3;PHC3;DCDC1;ZNF717;ZNF678;WDCP;BRWD1;KIAA0825;ANKRD36B*
KCNMA1-AS3	35/100	0.0029969704005812603	*INO80D;ANKRD36;KMT2C;GREB1L;ZBTB20;BAZ2B;EFCAB6;DUX4;ATXN1;KIAA1328;ZNF407;POTED;POTEC;ANKRD26;MBD5;MON2;RALGAPA1;ANKRD30A;LRBA;DNAH14;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;DCDC1;ZNF717;TTC6;NEK10;BIRC6;BRWD1;ZNF236;KIAA0825;ANKRD36B;TNRC6B*
ARHGEF7-AS1	35/100	0.0029969704005812603	*MAML2;PPM1L;ATL1;NRXN1;ADAM22;FRY;NOL4;CTIF;DPP6;MAP2;NCAM1;DIP2C;MPDZ;WASF3;TRIM23;ZHX3;CADM2;TMOD2;TCF12;EBF1;KIAA0232;PJA2;DNM3;SGSM1;ZEB1;NBEA;SETBP1;APC;ADGRB3;WDFY3;TCF4;TLN2;ARHGEF7;CDS2;PAFAH1B1*
GLCCI1-DT	35/100	0.0029969704005812603	*STX12;DOCK3;ATP8A1;PPM1L;RNF38;PRTG;HIRA;DPP6;MAP2;EPC2;NCAM1;FYN;SCAPER;TRIM23;NDFIP1;GRID1;ERCC6L2;TCF12;VPS13D;FBXL17;PJA2;ARHGAP31;TG;ZEB1;FCHSD2;PDP2;NBEA;SYNJ1;TBC1D5;UST;ELMO1;CCSER2;RAPGEF2;ZMYND11;PAFAH1B1*
ETV5-AS1	35/100	0.0029969704005812603	*NFAT5;INO80D;ANKRD36;CHD9;KMT2C;FMN1;PTPRJ;ASAP1;RGPD8;LYST;SDCBP;SPRED1;ZNF407;ZNF449;ABL2;ZNF106;HMCN1;DISC1;EVI5;ANKRD36C;MBD5;MON2;MYEF2;ERCC6L2;VPS13C;SETDB2;MYO5A;VPS13B;MITF;FER;WDCP;BIRC6;ZNF780B;ZNF236;ANKRD36B*
PEX5L-AS2	35/100	0.0029969704005812603	*MARCHF1;ANKRD36;CCDC126;GREB1L;EFCAB6;LRP2;NLK;DUX4;RIMS1;KIAA1328;HERC1;ERBB4;ZNF407;PSD3;POTED;HYDIN;TOGARAM1;ZNF385D;POTEC;ANKS1B;AUTS2;ANKRD30A;DNAH14;SORCS1;ASH1L;DCDC1;ARHGAP32;RABEP1;MYO3B;TTC6;NOS1AP;NEK10;ZNF236;KIAA0825;ANKRD36B*
EDIL3-DT	35/100	0.0029969704005812603	*NRP1;PRUNE2;PRICKLE2;LOXL2;MPRIP;CALD1;CHSY3;DIP2C;EDIL3;GPC6;ARSB;PRKG1;IKBIP;MYOCD;PDE4D;TPM1;AFAP1;EML1;PTPRD;TTLL7;VCAN;COL4A2;SLMAP;EOGT;CDH11;ITGA8;ULK2;CDH13;ROR1;ESYT2;FAT4;RAPGEF5;PPP1R12B;ASB2;VCL*
MAGI2-AS1	35/100	0.0029969704005812603	*ZNF891;NFAT5;INO80D;ANKRD36;CHD9;KMT2C;RGPD6;ZBTB20;ZDHHC21;SLC9C1;LPP;PTAR1;ATXN1;ZNF124;ANKRD36C;MBD5;MON2;RALGAPA1;ERCC6L2;VPS13C;OR1L6;RC3H1;VPS13B;LNPEP;PLEKHA3;HOOK3;PHC3;VMP1;FER;ZNF717;AGO3;ZNF780B;BRWD1;KIAA0825;ANKRD36B*
RERG-IT1	35/100	0.0029969704005812603	*STAU2;AFF3;FAM214A;RERG;HECTD2;TRPS1;RB1CC1;FAM241A;POTED;APBB2;NBN;PCMTD1;VAV3;ARFGEF1;LYPLA1;CERS6;ANKRD30A;LRBA;MRTFB;TBC1D9;ELP2;GFRA1;PRLR;ESR1;PBX1;INPP4B;RABEP1;TSPAN13;NDUFAF6;TTC6;BCL2;NEK10;SPOPL;LMX1B;FSIP1*
RORA-AS2	35/100	0.0029969704005812603	*PATJ;ANKRD36;KMT2C;GREB1L;RGPD6;ZBTB20;RORA;DUX4;KIAA1328;ZNF407;POTED;POTEG;ANKRD26;MBD5;MON2;ANKRD30A;ERCC6L2;DNAH14;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;LRP1B;ZNF717;SETBP1;TTC6;NFIA;NEK10;BIRC6;BRWD1;ZNF236;KIAA0825;ANKRD36B;TNRC6B*
FBXW7-	35/100	0.0029969704	*MYT1L;FRMPD4;DIRAS2;HTR2A;FBXO41;KIAA0513;*

AS1		005812603	*AKAP11;HERC1;SV2B;CHN1;TRAPPC11;ERC2;SCAPER;CACNG3;RBFOX1;MEF2C;SYT1;SGTB;PRKCB;ERCC6L2;SLC4A10;GRIN2B;SYN2;C1QL3;GABRG2;SNAP91;PJA2;CNKSR2;SYNJ1;APC;SCN8A;RAPGEF2;SCN2A;PAFAH1B1;RAPGEF4*
TSC22D1-AS1	35/100	0.0029969704005812603	*RERE;HDAC4;CRACD;ADAM22;AGAP1;NALCN;FBXO41;UNC80;HERC2;AKAP11;MAP2;HECTD4;LRIG1;DIP2A;DLGAP1;NPIPA1;NCAM1;SRGAP3;RALGPS1;ATP9A;MBD5;PTPRN2;CADM2;CADPS;LSAMP;PRKCA;SNAP91;DNM3;SYNJ1;TAOK3;ADGRB3;TBC1D5;MADD;CNTN3;ASTN1*
LINC02085	34/100	0.005752228436968856	*WDR26;SLC1A1;SLC40A1;BZW1;FAM214A;RERG;MIPOL1;CYP4Z1;HHAT;FUT8;PRRC1;ZNHIT6;FAM241A;SLC39A6;IARS2;PRKACB;RALGPS2;CERS6;TBC1D9;ELP2;TC2N;ESR1;PBX1;SRP9;FAM135B;RABEP1;NAT1;SPOPL;RAB3GAP2;INTS7;LMX1B;BMPR1B;FSIP1;SEC24D*
LINC01567	34/100	0.005752228436968856	*NFAT5;MARCHF1;CUL5;PPM1L;ZNF292;RGPD6;ZBTB20;RGPD5;CDH7;HS6ST3;AP5M1;KIAA1328;PLCZ1;TRIM2;THSD7A;RNF152;ZNF124;UNC13C;ANKRD36C;MBD5;STPG2;ZNF382;RALGAPA1;PDE4D;ADAM32;PLEKHA3;MOB1B;ZNF717;SYT10;LRRC9;ZNF780B;DGKI;CNTNAP5;ZNF431*
LINC00457	34/100	0.005752228436968856	*RYR2;CCDC186;KMT2C;RGPD6;ZBTB20;NEDD4L;LCLAT1;ACACA;POTEM;POTEH;SNX25;POTEG;VSTM4;ZFHX3;ST6GAL2;SLC15A2;LIMCH1;RALGAPA1;RALGAPA2;MAGI3;LRBA;PBX3;ARHGAP28;KCNAB1;ASH1L;PHC3;FRMD3;NBEA;TTC6;NFIA;PRR16;UTRN;DGKI;XKR6*
LINC00710	34/100	0.005752228436968856	*MACF1;NFAT5;INO80D;ANKRD36;CHD9;KMT2C;ZBTB20;RORA;ZDHHC21;BAZ2B;SLC9C1;LPP;SYNE1;ATXN1;MACROD2;EVI5;ANKRD36C;DNAH11;MBD5;MON2;ERCC6L2;VPS13C;ATRX;OR1L6;RC3H1;VPS13B;PLEKHA3;PHC3;AGO3;FAT4;BRWD1;KIAA0825;ANKRD36B;TNRC6B*
LINC00362	34/100	0.005752228436968856	*PATJ;KCNE4;PRDM15;TULP4;LDLRAD3;LDLRAD4;FAM214A;TRPS1;GAST;APBB2;PRKACB;CPA6;SGCG;RALGPS2;LRBA;VPS13B;LNPEP;GFRA1;ESR1;PBX1;MED13L;VMP1;SPATA17;RABEP1;TTC6;BCL2;BMP2K;SPOPL;ZNF678;BMPR1B;BRWD1;FSIP1;FGF12;FBXL7*
LINC01677	34/100	0.005752228436968856	*DGKG;CRB1;GALNT13;RTN1;HEPACAM;MEGF11;CTNND2;KLHL32;ADAM22;GRIK4;GRIK2;NDRG2;TRIM9;CDH20;MAP2;GDAP1L1;DNER;PHACTR3;TNR;NCAM1;EPHB1;GRIA4;RFTN2;NTRK2;GRID2;DSCAM;CADM2;LSAMP;ATAT1;SLC25A18;ADGRB3;SMOC1;SCG3;APBA2*
LINC01069	34/100	0.005752228436968856	*SHC4;NLGN1;PHLPP1;ABCB5;AKAP6;SDCBP;DSTYK;UBL3;SGCD;CHCHD6;MXI1;RGS20;RTTN;PHACTR1;PRAME;ZNF106;HMCN1;STK32A;SOX6;PKNOX2;SOX5;BCAS3;MYEF2;MYO10;MICAL3;MYO5A;CABLES1;MITF;NSG1;CORO2B;IGSF11;NRG3;SPIRE1;MDGA2*
LINC01238	34/100	0.005752228436968856	*PTPRT;USP14;GREB1L;DUX4;FAM214A;TMEM25;CYP4Z1;TRPS1;PSD3;FAM241A;POTED;SLC39A6;ST8SIA6;ZNF385D;POTEC;RALGPS2;KDM4B;AUTS2;ANKRD30A;MRTFB;COG2;TBC1D9;ELP2;GFRA1;ASH1L;ESR1;DCDC1;RABEP1;NAT1;TTC6;NEK10;SPOPL;LMX1B;BMPR1B*
LINC02224	34/100	0.005752228436968856	*PTPRT;USP14;CLSTN2;KCNE4;LRP2;AFF3;BZW1;TMEM241;RERG;TMEM25;DACH1;TRPS1;FAM241A;SLC3*

			9A6;MALRD1;PRKACB;RALGPS2;CERS6;CYBRD1;TBC1D9;ELP2;GFRA1;ESR1;PBX1;MED13L;RABEP1;TSPAN13;NAT1;KIF16B;BCL2;LMX1B;BMPR1B;FSIP1;FGF10
LINC02598	34/100	0.005752228436968856	CRB1;GALNT13;PHLPP1;PLPPR1;LUZP2;CTNND2;PCDH15;ADAM22;GRIK4;GRIK2;NDRG2;IQCJ-SCHIP1;TRIM9;MAP2;SNTG1;CDH20;NCAM1;KIF21B;KCNN3;CSMD2;EPHB1;GRIA4;RFTN2;NTRK2;GRID2;DSCAM;KCND2;TCF12;LSAMP;LHFPL3;ATAT1;FCHSD2;ZEB1;APBA2
LINC00517	34/100	0.005752228436968856	PATJ;ANKRD36;KMT2C;GREB1L;ZBTB20;LPP;POTEM;ATXN1;KIAA1328;POTEH;POTEJ;ZNF407;POTED;POTEG;ANKRD26;MBD5;ANKRD30B;ANKRD30A;ERCC6L2;DNAH14;OR1L6;VPS13B;ASH1L;DEFB108B;PHC3;ZNF717;TTC6;NFIA;UTRN;BRWD1;ZNF236;KIAA0825;ANKRD36B;TNRC6B
RAMP2-AS1	34/100	0.005752228436968856	PTPRT;GALNT13;CLSTN2;ADAM22;GRIK4;LDLRAD3;LDLRAD4;GLI3;SCAF8;CDH20;TRPS1;LRIG1;APBB2;MPDZ;WASF3;TRIM23;RFTN2;ARNT2;ANKRD26;MAGI2;EBF1;GFRA1;ESR1;ZDHHC17;PBX1;TNRC6C;ARHGAP31;RABEP1;ZEB1;PTPRA;TTC3;PWWP3A;ULK2;FBXL7
GCC2-AS1	34/100	0.005752228436968856	RBM47;PRKAA1;CCDC186;RGPD5;RGPD8;PRDM10;TM9SF3;DCAF1;DTWD2;MFSD9;UFL1;AUH;MAP7;RHPN2;SEC23B;PLS1;RANBP2;SLC37A1;BICRAL;RALGAPA2;DENND4C;SHROOM3;ELOVL7;CD2AP;ZNF33B;TM9SF2;RSPH3;NCOR1;DOP1B;MYO5B;SHLD2;MYO5C;CMPK1;ANAPC1
TPRG1-AS2	34/100	0.005752228436968856	PTPRT;MAST4;KCNE4;CCDC126;GREB1L;LDLRAD3;FAM214A;TMEM241;TMEM25;TRPS1;FAM241A;POTED;SLC39A6;ST8SIA6;RALGPS2;VAV3;KDM4B;SIAH2;COG2;CYBRD1;TBC1D9;ELP2;GFRA1;PRLR;ESR1;DCDC1;RABEP1;NAT1;KIF16B;NEK10;SPOPL;LMX1B;BMPR1B;FSIP1
LRRC8C-DT	34/100	0.005752228436968856	ZNF573;MACF1;PHLPP1;CHD9;CELF2;LYST;DOCK10;SRGAP2C;HERC2;HERC1;MAN2A2;SACS;ANKFY1;DIP2B;LRRC8B;DISC1;SRGAP2B;ANKRD28;USP24;SGTB;PRKCB;ERCC6L2;YLPM1;MYO5A;IGSF11;CCDC88A;NIN;SYNJ1;AGO3;APC;TAOK3;RFX7;WDPCP;TNRC6B
SMAD9-IT1	34/100	0.005752228436968856	KMT2E;RABGAP1;ATP8A1;MAML2;ADAM22;ZBTB20;SYNE1;POTEM;AKAP11;POTEH;HECTD4;SCAPER;MPDZ;ZNF462;RIC3;MBD5;TMEM178B;ZBTB16;VPS13D;YLPM1;ZDHHC17;MYO9A;PYGO1;TJP1;ZEB1;SETBP1;NFIA;PEAK1;RUFY2;CCSER2;RAPGEF2;WDFY3;UTRN;ZMYND11
MKLN1-AS	34/100	0.005752228436968856	MTMR10;NLGN1;PLEKHB2;ZBTB20;PTPRJ;SLC4A4;CDC14B;ARHGAP12;BCL2L13;IMMP2L;RANBP3L;UBL3;TYW1;SOX6;BBS2;ZHX3;MYEF2;PNPLA8;SLC2A13;PRKCA;ARHGAP24;GPR137B;AIF1L;PARD3B;IGSF11;HADHB;CLCN5;TBC1D5;VPS41;EXOC4;SPIRE1;WDFY3;PRKD1;CDS2
WWTR1-IT1	34/100	0.005752228436968856	KMT2E;INO80D;ANKRD36;KMT2C;TSHZ2;RGPD6;ZBTB20;RGPD5;RGPD8;LPP;ATXN1;KIAA1328;ZNF407;ZNF124;ANKRD36C;ZNF462;ZFHX3;MBD5;MGA;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;VMP1;ZNF717;AGO3;WDPCP;BIRC6;FAT4;ZNF236;KIAA0825;ANKRD36B;TNRC6B
PKIA-	34/100	0.005752228436968856	ZNF891;NFAT5;ACSS3;CUL5;PPM1L;RGPD6;ZBTB20

AS1		36968856	*;RGPD5;ZDHHC21;CDH7;HS6ST3;AP5M1;KIAA1328; PLCZ1;THSD7A;RNF152;UNC13C;MBD5;STPG2;ABCA 5;RALGAPA1;ERCC6L2;PDE4D;PHC3;MOB1B;INPP4B ;ZNF717;SYT10;LRRC9;BRWD1;ATP6V0D2;DGKI;CN TNAP5;ZNF431*
NAV2-AS3	34/100	0.0057522284 36968856	*NFAT5;RGPD6;ZBTB20;RGPD5;ZDHHC21;SLC9C1;SY NE1;ACTR3C;AP5M1;KIAA1328;TRIM2;KIF21A;THS D7A;SHOC1;SCAPER;ANKRD36C;MBD5;MON2;ARHGEF 12;RALGAPA1;ERCC6L2;VPS13C;FBXL17;UBE2QL1; PLEKHA3;MOB1B;TRAPPC6B;ZNF678;ZNF780B;BRWD 1;PTPN4;ATP6V0D2;KIAA0825;CPEB4*
DLG2-AS2	34/100	0.0057522284 36968856	*RYR2;ZNF891;KMT2C;OR4K2;RGPD6;ZBTB20;RGPD5 ;ZDHHC21;RGPD8;LPP;RGPD4;POTEM;ATXN1;POTEH ;TMEM225;POTEG;ANKRD36C;ZFHX3;MBD5;RALGAPA 1;ERCC6L2;PLEKHA3;ASH1L;PHC3;PYGO1;GOLGA6C ;DLG2;ZNF717;NFIA;PRR16;ZNF780B;UTRN;BRWD1 ;PTPN4*
LINC016 02	33/100	0.0108779808 02436248	*CRB1;GALNT13;PID1;DGKB;GRIK4;GRIK2;UNC80;T RIM9;MAP2;DNER;GDAP1L1;PHACTR3;TNR;FYN;KIF 21B;CSMD3;SOX6;LRRC4C;CACNG2;EPHB1;GPR158; GRIA4;CA10;DSCAM;TCF12;LHFPL3;FCHSD2;SMOC1 ;UST;SCG3;TOX;MDGA2;FGF12*
LINC026 79	33/100	0.0108779808 02436248	*SLC44A5;ZNF891;KHDRBS2;ATP8A1;PELI2;ZDHHC2 1;NYAP2;PPP1R9A;MTMR7;MIPOL1;KIAA1328;ZSCA N30;TOGARAM1;SLC15A5;ZNF124;MBD5;WSB1;FANC M;RALGAPA1;LIMCH1;VPS13C;DNAH14;POU6F2;HOO K3;ASH1L;DDHD1;FOXP2;HIPK3;ZNF717;ZNF678;B RWD1;ZNF236;FRA10AC1*
LINC004 46	33/100	0.0108779808 02436248	*SHC4;PHLPP1;ABCB5;FMN1;AKAP6;TRPM1;SYNPR;S DCBP;UBL3;SGCD;SCFD2;CHCHD6;RGS20;RTTN;PHA CTR1;PRAME;ZNF106;STK32A;SNX8;PKNOX2;SOX5; MYEF2;MYO10;MOK;MYO5A;CABLES1;MITF;NSG1;GP R137B;IGSF11;NRG3;RAB38;RGS12*
LINC017 39	33/100	0.0108779808 02436248	*SHC4;IGSF3;ABCB5;FMN1;PTPRJ;LYST;SDCBP;DST YK;SGCD;SCFD2;CHCHD6;PACSIN2;ABL2;RGS 20;PHACTR1;PRAME;ZNF106;HMCN1;STK32A;ARHGE F11;MYEF2;MYO10;MOK;MYO5A;CABLES1;MITF;NSG 1;PARVB;S100B;IGSF11;FAM167B;ENTHD1*
LINC016 40	33/100	0.0108779808 02436248	*KMT2E;PPM1L;PRICKLE2;NRXN3;CACNA1C;LPP;MED 15;FYCO1;INPP5A;KIAA1328;PLCZ1;CALD1;ABL1; RBPMS2;PGM5;LARGE1;PRKG1;RALGPS1;MAGI1;ZFH X3;CBLIF;FOXN3;STON1- GTF2A1L;EML1;PARD3B;SMTN;SETBP1;ASXL3;SLMA P;KCNMA1;ZNF74;CCSER2;TTLL11*
LINC026 76	33/100	0.0108779808 02436248	*ZNF891;PATJ;ANKRD36;TULP4;GXYLT2;FAM214A;M IPOL1;HECTD2;POTEJ;TRPS1;PSD3;POTED;POTEG; MBD5;MON2;ADGRV1;ANKRD30A;CFAP70;LRBA;DNAH 14;OR1L6;PLXDC2;LRP1B;VMP1;ZNF717;TTC6;AKA P9;NEK10;SPOPL;ZNF678;BRWD1;KIAA0825;ANKRD 36B*
LINC021 51	33/100	0.0108779808 02436248	*GALNT13;PLPPR1;MEGF11;ADAM22;GRIK4;GRIK2;U NC80;DPP6;SNTG1;MAP2;RASGEF1C;GDAP1L1;DNER ;TNR;NCAM1;LRRC4C;CACNG2;GPR158;GRIA4;LING O1;CA10;DSCAM;LHFPL3;SEZ6L;MYT1;EPN2;SLC8A 3;ATAT1;NSG2;ADGRB3;SMOC1;UNC79;ASTN1*
LINC025 56	33/100	0.0108779808 02436248	*DGKG;GALNT13;MTMR3;PHLPP1;MEGF11;CELF2;TUT 4;ADAM22;GRIK4;GRIK2;CABIN1;CDH20;MAP2;TNR ;NCAM1;SRGAP3;SCAPER;GRIA4;RFTN2;SPEN;USP4 9;DSCAM;ZBTB16;TCF12;YLPM1;BCR;CCDC88A;FCH*

			SD2;AGO3;RFX7;SMOC1;ELMO1;FAM193A
LINC021 99	33/100	0.0108779808 02436248	SHC4;PHLPP1;FMN1;SDCBP;DSTYK;UBL3;SCFD2;CH CHD6;GNG7;ABL2;PHACTR1;PRAME;ZNF106;HMCN1; SRGAP2;DISC1;SOX5;PKNOX2;ARNT2;MYEF2;MYO10 ;ST8SIA1;MICAL3;MOK;MYO5A;MITF;NSG1;S100B; CORO2B;GPR137B;IGSF11;ITPKB;MDGA2
LINC014 90	33/100	0.0108779808 02436248	NECAB1;PPM1L;PTPRQ;ITPR2;AFF3;HS6ST3;CDH7; PLCZ1;GSE1;THSD7A;KIAA0319L;RNF152;SLC15A5 ;VAV3;UNC13C;KDM4B;STPG2;CERS6;AUTS2;ATRNL 1;AGL;VPS13B;SCAMP1;DCLK1;MOB1B;INPP4B;TSP AN13;SYT10;LRRC9;BMPR1B;FSIP1;DGKI;MBTPS2
LINC012 55	33/100	0.0108779808 02436248	KMT2E;CLSTN2;ANKRD36;KMT2C;ITPR2;LDLRAD4;K IAA1328;POTEJ;ZNF407;NSD1;CEP192;ANKS1B;AN KRD26;ANKRD30B;ANKRD30A;LRBA;DNAH14;VPS13B ;ASH1L;DEFB108B;ESR1;PBX1;INPP4B;TTC6;TASO R2;BIRC6;UTRN;BRWD1;ZNF236;KIAA0825;ANKRD3 6B;SHANK2;TNRC6B
LINC023 34	33/100	0.0108779808 02436248	ZNF891;NFAT5;INO80D;CUL5;ANKRD36;CHD9;ZNF2 92;RGPD6;ZBTB20;RGPD5;PTAR1;ACTR3C;PLCZ1;R NF152;ZNF124;ANKRD36C;MBD5;MON2;STPG2;ERCC 6L2;VPS13C;PDE4D;RC3H1;LNPEP;PLEKHA3;PHC3; MOB1B;ZNF717;AGO3;SYT10;DGKI;ANKRD36B;TNRC 6B
RBMS3- AS2	33/100	0.0108779808 02436248	ZNF891;NFAT5;INO80D;ANKRD36;CHD9;KMT2C;RGP D6;ZBTB20;ZDHHC21;SLC9C1;LPP;ATXN1;ZNF407; ANKRD36C;DNAH11;MBD5;MON2;VPS13C;OR1L6;RC3 H1;VPS13B;PLEKHA3;PHC3;VMP1;ZNF717;AGO3;WD PCP;ZNF780B;BIRC6;FAT4;BRWD1;KIAA0825;ANKR D36B
MAPRE3- AS1	33/100	0.0108779808 02436248	NFAT5;INO80D;MARCHF1;CUL5;PPM1L;ANKRD36;KM T2C;RGPD6;ZBTB20;RGPD5;SLC9C1;DUX4;ACTR3C; KIAA1328;PLCZ1;THSD7A;RNF152;MBD5;STPG2;ER CC6L2;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;MOB1B; ZNF717;SYT10;BIRC6;ZNF236;DGKI;ANKRD36B;TN RC6B
ZMYM4- AS1	33/100	0.0108779808 02436248	ZNF573;ANKRD17;INO80D;CHD9;ZNF292;KMT2C;IR EB2;LTN1;RGPD8;UBR1;RGPD4;ZMYM1;NIPBL;ZMYM 4;NSD1;TRAPPC11;CEP192;ZNF124;BPTF;USP24;F ANCM;ERCC6L2;VPS13C;MGA;ATRX;RC3H1;VPS13B; ASH1L;RC3H2;AGO3;RFX7;BIRC6;CSNK1G1
MFF-DT	33/100	0.0108779808 02436248	MTMR10;NLGN1;PPM1L;ADAM22;ZBTB20;MSANTD4;P PP1R9A;UBL3;THSD7A;SOX6;TRIM23;BBS2;RFTN2; ARNT2;MBD5;NDFIP1;ZHX3;PNPLA8;SLC2A13;MAGI 2;FBXL17;ANK2;ZDHHC17;PJA2;MOB1B;PDP2;TBC1 D5;RRAGD;VPS41;SPIRE1;WDFY3;COPS8;CPEB4
DENND6A -AS1	33/100	0.0108779808 02436248	ZNF573;ANKRD17;MACF1;SETD2;ROCK1;CHD9;IREB 2;LTN1;PRDM10;DCAF1;PCNX1;TRAPPC11;BPTF;US P24;USP8;MORC3;ERCC6L2;DENND4C;ATRX;RC3H1; VPS13B;ASH1L;GAPVD1;HIPK1;ARID1B;RC3H2;MED 13L;NIN;ELF2;RFX7;BIRC6;ZNF236;CSNK1G1
NR2F2- AS1	33/100	0.0108779808 02436248	NRP1;NFAT5;GALNT14;ENPEP;FLT1;PRKAA2;STXBP 4;ARHGEF28;ZBTB20;LDB2;SLC6A3;CNDP2;TTC28; ARHGAP42;EPB41L4A;SNX29;GRB10;ARSB;MBD5;VC AM1;INSR;ITGA1;CRIM1;PPP2R3A;MYO9A;ARHGAP2 4;SNRK;CLCN5;WDFY3;ALPK2;FAT4;ZNF611;TRABD 2B
MAPK10- AS1	33/100	0.0108779808 02436248	NFAT5;KMT2C;RGPD6;ZBTB20;RGPD5;ZNF66;RGPD8 ;BAZ2B;LIMD1;LPP;SYNE1;POTEM;POTEH;ZNF407; POTEG;ANKRD36C;ZNF462;ZFHX3;MBD5;ERCC6L2;M

			GA;OR1L6;VPS13B;PHC3;SMAD5;IQCM;ZNF717;WDF Y3;CCSER1;BIRC6;UTRN;ANKRD36B;TNRC6B
NAV2-AS1	33/100	0.0108779808 02436248	*DOCK3;DOCK9;ZFYVE1;HIRA;UBL3;SNX25;BBS9;ST K32A;VSTM4;TEAD1;RXRG;PKNOX2;CTSB;EPHA4;TR PC5;MYEF2;CADM1;MYO10;DENND2B;SAMD4A;FAM18 9A2;CABLES1;MITF;NAV2;FRMD3;ITPKB;TANC1;TG ;TCERG1L;IFT81;SLC27A6;ST6GALNAC3;ITGA9*
NAV2-AS5	33/100	0.0108779808 02436248	*MACF1;NFAT5;INO80D;ANKRD36;CHD9;KMT2C;ZBTB 20;RORA;ZDHHC21;BAZ2B;SLC9C1;LPP;RPS6KA3;A CTR3C;ATXN1;EVI5;ANKRD36C;DNAH11;MBD5;MON2 ;ERCC6L2;VPS13C;OR1L6;RC3H1;PLEKHA3;PHC3;V MP1;FER;AGO3;BRWD1;KIAA0825;ANKRD36B;TNRC6 B*
TSPAN9-IT1	33/100	0.0108779808 02436248	*ZNF891;NFAT5;INO80D;CUL5;ANKRD36;KMT2C;RGP D6;ZBTB20;ACTR3C;KIAA1328;PLCZ1;ZNF407;RNF 152;MBD5;MON2;STPG2;RALGAPA1;ERCC6L2;PDE4D ;OR1L6;RC3H1;VPS13B;LNPEP;PHC3;MYO9A;MOB1B ;ZNF717;SYT10;BRWD1;KIAA0825;DGKI;ANKRD36B ;TNRC6B*
TPM1-AS	33/100	0.0108779808 02436248	*PATJ;INO80D;ANKRD36;KMT2C;GREB1L;RGPD6;ZBT B20;RGPD5;RGPD8;DUX4;LPP;ATXN1;KIAA1328;ZN F407;POTED;POTEC;MBD5;ANKRD30A;DNAH14;OR1L 6;RC3H1;VPS13B;ASH1L;PHC3;DCDC1;ZNF717;TTC 6;NEK10;BIRC6;ZNF236;KIAA0825;ANKRD36B;TNR C6B*
LINC012 08	32/100	0.0192390540 39447853	*PTPRT;KCNE4;SLC1A1;SLC40A1;ICA1;GREB1L;PIK 3R3;LDLRAD3;FAM214A;TMEM241;ABCC12;TMEM25; ADAM29;TRPS1;PRKACB;KDM4B;SIAH2;TBC1D9;TC2 N;ESR1;NAALADL2;SRP9;AIMP1;RABEP1;TSPAN13; NAT1;TTC6;KIF16B;SPOPL;LMX1B;ADSS2;FSIP1*
LINC016 74	32/100	0.0192390540 39447853	*CCDC126;AFF3;FAM214A;TMEM241;TMEM25;TRPS1; FAM241A;POTED;SLC39A6;POTEB;POTEC;RALGPS2; CERS6;POTEB2;POTEB3;COG2;MRTFB;TBC1D9;ELP2 ;GFRA1;TC2N;PRLR;ESR1;RABEP1;TSPAN13;NAT1; TTC6;NEK10;SPOPL;LMX1B;DHX29;BMPR1B*
LINC012 09	32/100	0.0192390540 39447853	*KMT2E;ZNF891;ANKRD36;KMT2C;ZBTB20;ZDHHC21; LPP;ACTR3C;ATXN1;ZNF124;ANKRD36C;MBD5;RALG APA1;DNAH14;ATRX;RC3H1;VPS13B;PLEKHA3;HOOK 3;ASH1L;PHC3;PHF20L1;VMP1;NUP210L;AGO3;AGO 2;ZNF678;WDPCP;CCSER1;BIRC6;KIAA0825;ANKRD 36B*
LINC003 87	32/100	0.0192390540 39447853	*PTPRT;TMEM63C;GREB1L;LDLRAD4;FAM214A;TMEM2 5;HHAT;TRPS1;PSD3;FAM241A;POTED;SLC39A6;ST 8SIA6;APBB2;PCMTD1;VAV3;KDM4B;CERS6;NEBL;S IAH2;MRTFB;TBC1D9;ELP2;GFRA1;PRLR;ESR1;PBX 1;NELL2;RABEP1;NAT1;SPOPL;LMX1B*
LINC020 06	32/100	0.0192390540 39447853	*NFAT5;ACSS3;CUL5;PPM1L;ABCA13;CDH7;HS6ST3; AP5M1;KIAA1328;PLCZ1;TRIM2;ZNF208;KIF21A;T HSD7A;SAMD12;RNF152;UNC13C;STPG2;ABCA5;PDE 4D;SCAMP1;MOB1B;MAB21L3;INPP4B;TMEM116;SYT 10;LRRC9;ERP27;ATP6V0D2;DGKI;CNTNAP5;ZNF43 1*
LINC020 17	32/100	0.0192390540 39447853	*ADCYAP1R1;GALNT13;DIPK1A;RTN1;HEPACAM;LUZP 2;CTNND2;KLHL32;PCDH15;GRIK4;FMN2;NDRG2;SL C25A48;CDH20;FUT9;NCAM1;KCNN3;CSMD2;WASF3; RFTN2;NTRK2;SLC15A2;KCND2;CADM2;TMOD2;PDE4 DIP;ETNPPL;FRMD5;TAFA5;SMOC1;APBA2;ASB3*
LINC010 88	32/100	0.0192390540 39447853	*ADCYAP1R1;GALNT13;HPSE2;HEPACAM;LUZP2;CTNN D2;KLHL32;GRIK4;FMN2;NDRG2;CDH20;FUT9;NCAM*

			1;KCNN3;WASF3;JAM2;RFTN2;SLC14A1;NTRK2;SLC15A2;DTNA;ZHX3;LSAMP;PDE4DIP;GABRG1;ETNPPL;FRMD5;SLC25A18;PPP2R2B;CNTN1;CPE;ASB3
LINC01016	32/100	0.019239054039447853	*CLIC6;PARN;AFF3;FAM214A;TMEM241;RERG;GLI3;TMEM25;TRPS1;FAM241A;NRIP1;ST8SIA6;FLNB;RALGPS2;VAV3;KDM4B;MAGI3;SIAH2;GREB1;MRTFB;TBC1D9;GFRA1;PRLR;ESR1;INPP4B;RABEP1;TSPAN13;NEK10;SPOPL;LMX1B;BMPR1B;FSIP1*
LINC00564	32/100	0.019239054039447853	*KCNE4;PTPRQ;ITPR2;SIPA1L2;AFF3;PRSS23;TMEM25;ALCAM;ZNRF3;ERBB4;TRPS1;ANKRD31;ENPP1;LARGE1;SLC37A2;ATRNL1;SIAH2;ELP2;PXDNL;ERLIN2;PRLR;GABRG2;PARP8;KITLG;SPATA17;CNKSR3;BMPR1B;VSTM2A;FSIP1;PDZRN3;FBXL7;FGF10*
LINC00836	32/100	0.019239054039447853	*ADCYAP1R1;GALNT13;PHLPP1;HEPACAM;LUZP2;CTNND2;KLHL32;PCDH15;GRIK4;FMN2;NDRG2;SLC25A48;CDH20;FUT9;NCAM1;KCNN3;WASF3;JAM2;GRIA4;RFTN2;NTRK2;DTNA;CADM2;TMOD2;LSAMP;PDE4DIP;ETNPPL;FRMD5;PPP2R2B;SMOC1;SCG3;ASB3*
WDFY3-AS2	32/100	0.019239054039447853	*ADCYAP1R1;MTMR10;NLGN1;CTNND2;KLHL32;ADAM22;GRIK4;FMN2;NDRG2;IQCJ-SCHIP1;CDH20;NCAM1;KCNN3;WASF3;JAM2;TRIM23;GRIA4;BBS2;RFTN2;NTRK2;DTNA;ZHX3;CADM2;TMOD2;MAGI2;ANK2;APC;ADGRB3;PPP2R2B;SPIRE1;CPE;WDFY3*
RORB-AS1	32/100	0.019239054039447853	*SLC23A2;ABCD2;RTN1;KCNC1;MYT1L;FRMPD4;ATL1;SLC1A2;RORB;KIAA0513;SV2B;NCS1;CHN1;SPOCK1;CTNNA2;PPFIA2;RGS7;RBFOX1;PDE2A;SLC4A10;SYT16;ATP2B2;SYN2;SNAP91;CNKSR2;EML6;TAFA4;DLG2;SCN8A;PRKD1;SCN2A;ASTN1*
DOCK4-AS1	32/100	0.019239054039447853	*ZNF891;NFAT5;INO80D;ANKRD36;KMT2C;RGPD6;ZBTB20;RGPD5;ZDHHC21;RGPD8;SLC9C1;ATXN1;ZNF407;ZNF124;ANKRD36C;MBD5;MON2;VPS13C;DNAH14;OR1L6;RC3H1;VPS13B;PLEKHA3;PHC3;VMP1;ZNF717;AGO3;WDPCP;BIRC6;BRWD1;KIAA0825;ANKRD36B*
ENTPD1-AS1	32/100	0.019239054039447853	*ITSN2;MACF1;NFAT5;INO80D;DOCK9;CHD9;KMT2C;BAZ2B;AKAP13;PCNX1;HERC1;VSTM4;SCAPER;ST6GAL2;ERCC6L2;VPS13C;ATRX;RC3H1;HOOK3;PHC3;ARID1B;PIAS1;FRMD3;MLLT10;TG;TCERG1L;AGO3;LPCAT2;BIRC6;ZNF431;ITGA9;TNRC6B*
NCKAP5-IT1	32/100	0.019239054039447853	*PATJ;ANKRD36;KMT2C;TULP4;SLC9C1;ATXN1;ZNF407;PSD3;POTED;ZNF124;ANKRD26;MBD5;MON2;ANKRD30A;DNAH14;OR1L6;RC3H1;VPS13B;ASH1L;PLXDC2;LRP1B;VMP1;TTC6;AKAP9;NEK10;SPOPL;ZNF678;WDPCP;BIRC6;BRWD1;KIAA0825;ANKRD36B*
NCKAP5-AS1	32/100	0.019239054039447853	*PATJ;INO80D;CATSPER2;ANKRD36;KMT2C;GREB1L;ZBTB20;DUX4;FBXL20;ATXN1;KIAA1328;ZNF407;POTEC;ANKRD26;MBD5;RALGAPA1;ANKRD30A;DNAH14;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;ZNF717;TTC6;ZNF678;BIRC6;CDK12;BRWD1;ZNF236;KIAA0825;ANKRD36B*
PCDH9-AS4	32/100	0.019239054039447853	*DOCK4;INO80D;ANKRD36;KMT2C;RGPD6;ZBTB20;RGPD5;ZNF518A;ZDHHC21;RGPD8;BAZ2B;SYNE1;ATXN1;ZNF124;ANKRD36C;MBD5;PCDH9;RALGAPA1;ANKRD30A;RC3H1;VPS13B;PLEKHA3;LRP1B;DNM3;VMP1;AGO3;AGO2;WDPCP;ZNF678;BIRC6;DOCK1;ANKRD36B*
PABPC5-AS1	32/100	0.019239054039447853	*SLC23A2;ATL1;ADAM22;NALCN;UNC80;CTIF;DPP6;DSTYK;GNG2;ZNF704;AKT3;NCAM1;DIP2C;LRRC4C;*

			MPDZ;GPR158;TRIM23;GARNL3;JAZF1;ZNF287;ANKRD26;MYEF2;ANKRD30B;LSAMP;PJA2;PYGO1;DNM3;NBEA;MMP16;ADGRB3;TTC3;CDS2
RBMS3-AS1	32/100	0.019239054039447853	*NFAT5;INO80D;ANKRD36;CHD9;KMT2C;ZBTB20;ZDHHC21;SLC9C1;PTAR1;ATXN1;ZNF407;ANKRD36C;DNAH11;MBD5;MON2;ERCC6L2;VPS13C;OR1L6;RC3H1;VPS13B;PLEKHA3;PHC3;VMP1;FER;AGO3;BIRC6;ZNF780B;FAT4;BRWD1;KIAA0825;ANKRD36B;RBMS3*
GPC5-IT1	32/100	0.019239054039447853	*ZNF518A;RORB;MSI2;BAZ2B;ANKRD20A1;CDH9;KALRN;SYNE1;ADAM28;CAPN5;NRIP1;GPC5;HSF5;CTSE;RGS6;SCAI;ZNF124;BPTF;MEF2C;POU1F1;KLF12;MBD5;XRCC4;ITGA4;RC3H1;SLC6A11;FAM126B;FER1L6;GNAQ;CLDN18;MDGA2;TNRC6B*
CREB3L2-AS1	32/100	0.019239054039447853	*ZNF891;NFAT5;INO80D;ANKRD36;KMT2C;ZBTB20;ZDHHC21;SLC9C1;LPP;ATXN1;ZNF124;ANKRD36C;MBD5;MON2;RALGAPA1;VPS13C;DNAH14;OR1L6;RC3H1;VPS13B;PLEKHA3;PHC3;VMP1;ZNF717;AGO3;ZNF678;WDPCP;BIRC6;BRWD1;KIAA0825;ANKRD36B;TNRC6B*
CNTN4-AS1	32/100	0.019239054039447853	*APP;STX12;ATP8A1;CPQ;DOCK9;COL14A1;SDC2;PRICKLE2;LAMC1;PTPRG;ABL1;BBS9;EPC2;SLIT3;PTCHD4;VSTM4;STARD13;ARHGEF12;CNTN6;LAMB1;PJA2;PARD3B;ADCY9;TBC1D5;SLC27A6;CNTN4;UTRN;ZMYND11;DOCK1;JCAD;RBMS3;ITGA9*
C3orf67-AS1	32/100	0.019239054039447853	*MTPN;UHRF1BP1L;DOCK4;KCNC1;MYT1L;RAP1GDS1;SLC9C1;EHBP1;ATXN1;AKAP11;ANKRD31;TRIM23;TANGO6;ANKRD26;MBD5;PTCD2;SYT1;SGTB;ATRNL1;SLC2A13;CADPS;KIAA1549L;ATP2B2;GRIN2B;SYN2;GABRG2;MOSMO;FER;SYNJ1;PPP2R2C;SCN8A;MBTPS2*
ZFAT-AS1	32/100	0.019239054039447853	*ZNF573;ANKRD17;ASAP1;ZFYVE26;KIAA1328;ZNF407;NSD1;TOGARAM1;NBN;ATP9B;USP24;CUBN;MBD5;FANCM;YTHDF3;ERCC6L2;MGA;TRAPPC10;VPS13B;DNAJC13;ASH1L;MYO9A;HIPK3;PHF20L1;AGO2;GEMIN5;RAB3GAP2;WDPCP;BIRC6;ZNF611;ZNF236;CSNK1G1*
MAST4-IT1	32/100	0.019239054039447853	*ZNF891;INO80D;ANKRD36;KMT2C;ZBTB20;ZDHHC21;SLC9C1;FAM214A;ATXN1;DNAH11;MBD5;MON2;RALGAPA1;ANKRD30A;VPS13C;DNAH14;MUC19;OR1L6;RC3H1;VPS13B;LNPEP;PHC3;LRP1B;VMP1;ZNF717;AGO3;TTC6;ZNF678;ZNF780B;BRWD1;KIAA0825;ANKRD36B*
EGFLAM-AS3	32/100	0.019239054039447853	*ZNF891;NFAT5;INO80D;ANKRD36;KMT2C;RGPD6;TULP4;RGPD5;SLC9C1;LPP;ACTR3C;ATXN1;ZNF407;ZNF124;ANKRD36C;ANKRD26;MBD5;DNAH14;OR1L6;RC3H1;VPS13B;PLEKHA3;ZNF717;AGO3;APLF;WDPCP;CCSER1;BIRC6;BRWD1;KIAA0825;ANKRD36B;TNRC6B*
SEMA6A-AS2	32/100	0.019239054039447853	*NLGN1;PHLPP1;CRACD;FMN1;DSTYK;NKAIN3;UBL3;MXI1;ANKFY1;MAPK1;PHACTR1;MAP4;DIP2C;SOX6;SRGAP2B;PKNOX2;ARNT2;MYEF2;MYO10;MICAL3;MYO5A;CABLES1;MITF;ANK2;GPR137B;IGSF11;ITPKB;NRG3;APC;SPIRE1;MDGA2;MAPRE2*
C1QTNF7-AS1	32/100	0.019239054039447853	*ABCB5;FMN1;PTPRJ;ZFYVE1;TRPM1;BCL2L13;SDCBP;ZFYVE26;DSTYK;SGCD;UBL3;MXI1;LONP2;ABL2;RGS20;RTTN;ZNF106;DIP2C;MYEF2;MYO10;SETDB2;MYO5A;CABLES1;MITF;PARVB;NSG1;GNG12;GPR137B;INPP4B;BCL2;SPIRE1;RAB38*
SLC25A4	32/100	0.0192390540	*PATJ;INO80D;CATSPER2;ANKRD36;KMT2C;ZBTB20;*

8-AS1		39447853	ZDHHC21;SLC9C1;FBXL20;ATXN1;ZNF407;MED1;ANKRD26;MBD5;MON2;DNAH14;MRTFB;RC3H1;VPS13B;LNPEP;ASH1L;DEFB108B;PHC3;VMP1;ZNF717;AGO3;ZNF678;BIRC6;CDK12;BRWD1;KIAA0825;ANKRD36B
TSPAN18-AS1	32/100	0.0192390540 39447853	ZNF891;ENPEP;INO80D;DYSF;RORA;CACNA1C;SLC9C1;LPP;TTC28;PTAR1;ZNF449;PHACTR2;ALKAL2;PRKG1;PDK1;MBNL1;MBD5;KSR1;ZNF160;INSR;ITGA1;ATP11C;RC3H1;TET1;EML1;PHC3;MYO9A;AGO2;FAT4;ZNF611;PPP1R12B;TNRC6B
PAPPA-AS1	32/100	0.0192390540 39447853	NFAT5;TSPAN33;FSTL1;CMIP;SYNE2;HRH1;ADAMTS2;SNX29;IMPA2;SLC17A1;GPC6;KCNJ1;KL;PAQR5;PDE4D;SLC2A13;SLC12A1;CRIM1;KCNJ15;LAMB1;PPP2R3A;GNG12;ARHGAP24;AIF1L;MYO1E;CLCN5;EVC;LATS2;PAPPA;FAT1;FBN1;SNTB2
LDLRAD4-AS1	32/100	0.0192390540 39447853	INO80D;ANKRD36;KMT2C;ZBTB20;LDLRAD4;BAZ2B;ATXN1;KIAA1328;ZNF407;BPTF;ANKRD26;MBD5;MON2;ANKRD30A;MGA;DNAH14;OR1L6;RC3H1;VPS13B;ASH1L;DEFB108B;PHC3;ZNF717;AGO3;ZNF678;WDPCP;BIRC6;BRWD1;ZNF236;KIAA0825;ANKRD36B;TNRC6B
LINC006 54	31/100	0.0323075728 6402911	ZNF573;DIDO1;NFAT5;INO80D;CHD9;ROCK2;KMT2C;ZNF518A;BAZ2B;AKAP11;EPC2;ATP9A;BPTF;MBD5;PTCD2;ERCC6L2;ZBTB38;VPS13C;DENND4C;ATRX;SUSD1;FNDC3A;PLCB4;ZNF717;AGO3;TBC1D5;VPS41;BIRC6;ZNF780B;AVL9;FRYL
LINC006 30	31/100	0.0323075728 6402911	ZNF573;INO80D;ANKRD36;ZNF292;KMT2C;ZNF518A;RGPD8;BAZ2B;NIPBL;ZMYM1;CEP192;ZNF124;ANKRD26;MBD5;FANCM;ERCC6L2;VPS13C;MGA;ATRX;RC3H1;VPS13B;ASH1L;PHC3;AGO3;WDPCP;ZNF678;BIRC6;BRWD1;ZNF236;ANKRD36B;TNRC6B
LINC008 63	31/100	0.0323075728 6402911	ZNF573;HDAC4;KMT2C;SOGA1;HERC2;HERC1;HECTD4;MARCHF8;ANKFY1;DIP2A;SCAPER;BPTF;CREBBP;MBD5;USP49;FBXW8;ZNF382;ERCC6L2;YLPM1;ASH1L;ARID1B;GATAD2B;TNRC6C;RFX7;TBC1D5;RUFY2;MADD;TTC3;FAM193A;ZNF236;TNRC6B
LINC027 94	31/100	0.0323075728 6402911	NRP1;GALNT14;ENPEP;FLT1;ANKRD33B;PRKAA2;ARHGEF28;USH1C;ACSM2A;LRP2;SLC6A3;CNDP2;EPB41L4A;SNX29;IMPA2;ITGB8;ENPP3;SLC17A1;TINAG;CUBN;EGLN3;VCAM1;INSR;CRIM1;PPP2R3A;MYO9A;CLCN5;ALPK2;ZNF611;TRABD2B;CREB5
LINC012 93	31/100	0.0323075728 6402911	SHC4;IGSF3;ABCB5;FMN1;LYST;STK10;SDCBP;DSTYK;SGCD;UBL3;CHCHD6;ABL2;RGS20;PHACTR1;PRAME;ZNF106;HMCN1;SRGAP2;ARHGEF11;BCAS3;MYEF2;MYO10;SETDB2;MOK;MYO5A;CABLES1;MITF;NSG1;GPR137B;IGSF11;FAM167B
LINC004 84	31/100	0.0323075728 6402911	ZNF573;NFAT5;INO80D;ANKRD36;KMT2C;RGPD6;ZBTB20;RGPD8;BAZ2B;PCNX1;KIAA1328;HERC1;ZNF407;ATP9B;ZFHX3;MBD5;ERCC6L2;MGA;OR1L6;RC3H1;LNPEP;ASH1L;PHC3;ZNF717;AGO3;WDPCP;BIRC6;ZNF780B;UTRN;ANKRD36B;TNRC6B
LINC019 45	31/100	0.0323075728 6402911	ITIH5;MEGF10;SH3KBP1;SEMA3A;AKAP6;LAMC1;PCMTD2;SDCBP;GNG2;GNG7;PRAME;HMCN1;SRGAP2;SOX5;MAP4K4;KIRREL1;PHC2;EYA1;MYO10;PCDH7;HMGA2;SORCS1;CORO2B;AIMP1;IGSF11;MOSMO;MMP16;CNTN4;B4GALT6;FREM1;CNIH3
LINC020 30	31/100	0.0323075728 6402911	ADCYAP1R1;SLC24A3;BNC2;LUZP2;CTNND2;PCDH15;KLHL13;CACNA1C;NDRG2;TSPAN11;PHF21B;RIMS2;ADAMTS19;CDH20;LRIG1;NCAM1;KCNN3;RFTN2;MY

			OCD;KCND2;LRRC49;SHISAL1;UNC5D;TAFA5;GHRH; ADGRB1;PRR16;PPP1R12B;PLCB1;PDZRN3;APBA2
LINC02024	31/100	0.03230757286402911	*RYR2;KMT2C;ZBTB20;POTEM;KIAA1328;POTEH;PLCZ1;HECTD4;POTEG;POTEB;ZNF462;ZFHX3;EPHA6;POTEB2;POTEB3;ERCC6L2;ZBTB16;PDE4D;MGA;OR1L6;VPS13B;PHC3;SETBP1;TTC6;NFIA;LRRC9;FAT3;UTRN;DGKI;ANKRD36B;TNRC6B*
LINC02157	31/100	0.03230757286402911	*NRP1;GALNT14;ENPEP;FLT1;PRKAA2;ARHGEF28;RORA;SLC6A3;SYNE2;CNDP2;TTC28;ARHGAP42;EPB41L4A;SNX29;ITGB8;ARSB;VCAM1;INSR;ITGA1;PPP2R3A;MYO9A;SNRK;CLCN5;EVC;GSAP;WDFY3;ALPK2;FAT4;ZNF611;TRABD2B;CREB5*
LINC02516	31/100	0.03230757286402911	*ZNF891;PATJ;INO80D;ANKRD36;GREB1L;ZDHHC21;BAZ2B;SLC9C1;ZNF407;POTED;ZNF124;ANKRD36C;ANKRD26;MBD5;MON2;ANKRD30A;LRBA;VPS13C;DNAH14;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;VMP1;ZNF717;TTC6;ZNF678;BRWD1;KIAA0825;ANKRD36B*
LINC01751	31/100	0.03230757286402911	*NRP1;GALNT14;ENPEP;FLT1;ANKRD33B;PRKAA2;ARHGEF28;LRP2;SLC6A3;CNDP2;ARHGAP42;EPB41L4A;TTC21B;ST8SIA4;ENPP3;PDK1;CUBN;EGLN3;VCAM1;KSR1;INSR;ANXA4;COL23A1;FOXJ3;MYO9A;OR2T2;PLIN2;TLL1;ALPK2;ZNF611;SMPDL3A*
LINC01924	31/100	0.03230757286402911	*NFAT5;ACSS3;CUL5;PPM1L;SLC40A1;CDH7;HS6ST3;SPATA48;AP5M1;KIAA1328;PLCZ1;TRIM2;ZNF208;THSD7A;RNF152;UNC13C;FYB2;STPG2;PDE4D;SCAMP1;MOB1B;INPP4B;TBC1D1;TMEM116;SYT10;LRRC9;ERP27;ATP6V0D2;DGKI;CNTNAP5;ZNF431*
LINC02035	31/100	0.03230757286402911	*MAPKBP1;MACF1;MTMR3;USP31;CHD9;KMT2C;BAZ2B;PCNX1;NIPBL;KPNA1;SPEN;MBNL1;DST;ERCC6L2;EXOC6B;RC3H1;DNAJC13;LNPEP;ASH1L;GAPVD1;PHC3;RC3H2;HIPK3;PIAS1;AGO3;KANSL1;RFX7;SLC9A4;ZNF236;CSNK1G1;TNRC6B*
EGFR-AS1	31/100	0.03230757286402911	*DOCK4;NLGN1;FLT1;TSHZ2;MEOX2;EGFR;CHCHD2;SNTG1;SACS;DPF3;MAPK1;ENPP3;ADAMTS9;ZNF462;EGLN3;WSCD1;KSR1;NEK6;FOXJ3;NETO2;KLHL4;IL17RD;CCDC88A;MMP16;FAT1;FAT3;TCF4;PLIN2;FAT4;ADGRL2;CREB5*
LAMC1-AS1	31/100	0.03230757286402911	*KMT2E;NFAT5;INO80D;TUT4;RGPD6;RGPD5;ZNF518A;RGPD8;LAMC1;BTAF1;MSANTD2;KIAA0753;ZNF449;KHDC4;HIVEP2;TEAD1;ZNF124;ZFHX3;MBD5;ZNF160;DNAH14;FNDC3B;RC3H1;HOOK3;PHC3;VMP1;AGO3;AGO2;PKN2;ZNF236;SNTB2*
TGFA-IT1	31/100	0.03230757286402911	*INO80D;ANKRD36;CHD9;ZNF292;TGFA;RORA;SYNE2;SLC6A3;PTAR1;ACTR3C;ATXN1;CCDC141;PDK1;PRELID2;DNAH11;MBD5;MON2;VPS13C;RC3H1;LNPEP;FAM126B;MYO9A;OR2T2;AGO3;WDFY3;BIRC6;ALPK2;FAT4;ZNF611;KIAA0825;ANKRD36B*
EIPR1-IT1	31/100	0.03230757286402911	*KHDRBS2;CPQ;SDC2;RAP1GAP;LRRC2;PRTG;HIRA;DEPTOR;APMAP;ZMAT4;RGS8;GOLGA8S;ST6GAL2;WSCD2;EIPR1;ZNF804B;KCNAB1;SORBS2;IPCEF1;BMP7;POR;TG;UST;MPPED2;LPCAT2;ELMO1;TRIM58;PKHD1L1;ZMYND11;PTPN4;MATN2*
LAMP5-AS1	31/100	0.03230757286402911	*DOCK3;TENM3;TSHZ2;CELF4;CACNA1E;FBXO41;CLTCL1;CHN1;SRGAP3;ERC2;ADAMTS9;ZNF521;RGS7;GOLGA8S;EPHA4;RBFOX1;PRMT8;GOLGA8T;CADM1;GRID1;GOLGA8J;IL17RD;IL17RA;CNKSR2;MMP16;AMPH;FAT3;CNTN3;TCF4;ANKRD18A;PDZRN4*
SHANK2-AS1	31/100	0.03230757286402911	*PATJ;INO80D;ANKRD36;KMT2C;RGPD6;ZBTB20;BAZ2B;SLC9C1;ATXN1;KIAA1328;ZNF407;ZNF124;ANK*

			RD26;MBD5;ANKRD30B;ANKRD30A;DNAH14;OR1L6;R C3H1;VPS13B;ASH1L;DEFB108B;PHC3;ZNF717;ZNF 678;BIRC6;BRWD1;ZNF236;KIAA0825;ANKRD36B;T NRC6B
CNTN4-AS2	31/100	0.0323075728 6402911	*ZNF891;TSHZ2;RGPD6;ZBTB20;RGPD5;RGPD8;AKAP 13;SCAF8;KIAA1328;HECTD2;ZNF407;MPDZ;ADAMT S9;ZNF462;MBD5;ANKRD30A;VPS13B;IL17RD;LRP1 B;ZNF717;MMP16;SETBP1;NFIA;TTC3;FAT3;CNTN3 ;CNTN4;FAT4;UTRN;ZNF236;RBMS3*
TTC3-AS1	31/100	0.0323075728 6402911	*DDX6;UHRF1BP1L;SETD2;TNKS;LTN1;CHD6;RGPD8; AKAP11;HECTD4;TOGARAM1;EPC2;SCAPER;TRIM23; TTC37;NEK4;ERCC6L2;ATRX;TCF12;YLPM1;ASH1L; PJA2;SYNJ1;APC;TBC1D5;RUFY2;TTC3;CCSER2;ZN F678;BRWD1;ZMYND11;ZNF112*
GPC5-AS2	31/100	0.0323075728 6402911	*NFAT5;ANKRD36;ZNF292;KMT2C;RGPD6;ZNF518A;R GPD5;RGPD8;ZNF66;RORB;BAZ2B;ANKRD20A1;CDH9 ;SYNE1;NRIP1;HSF5;SCAI;ZNF124;BPTF;MEF2C;P OU1F1;MBD5;ITGA4;RC3H1;KITLG;AGO3;NCOA7;UT RN;MDGA2;DOCK1;TNRC6B*
SLC16A1 2-AS1	31/100	0.0323075728 6402911	*CYFIP2;PRKN;GALNT14;ENPEP;PRKAA2;ARHGEF28; ACSM2A;SLC5A12;GLYAT;LRP2;ACSM2B;CNDP2;PBL D;SNX29;IMPA2;SLC16A9;SLC17A1;TINAG;CUBN;K L;MGAM;PAQR5;PLCL1;CRIM1;KCNJ15;MYO9A;ARHG AP24;AIF1L;MSRA;CLCN5;GIPC2*
ID2-AS1	31/100	0.0323075728 6402911	*ADCYAP1R1;GALNT13;HEPACAM;LUZP2;CTNND2;NRX N1;KLHL32;ADAM22;GRIK4;FMN2;NDRG2;IQCJ- SCHIP1;CDH20;FUT9;NCAM1;KCNN3;MAP4;WASF3;B BS2;RFTN2;NTRK2;DTNA;ZHX3;CADM2;TMOD2;PRKC A;GABRG1;ETNPPL;PTPRD;APC;PPP2R2B*
MSC-AS1	31/100	0.0323075728 6402911	*NRP1;GALNT14;ENPEP;MTMR2;BNC2;DYSF;ASAP1;E TS1;GLIS1;SDCBP;ARHGAP42;SNX29;CHSY3;DIP2C ;GPC6;ARSB;IKBIP;KIRREL1;VCAM1;PLEKHA2;MIT F;ANO6;LHFPL2;GNG12;SNAI2;SRFBP1;PLIN2;TLL 1;ALPK2;RGL1;LRP12*
VLDLR-AS1	31/100	0.0323075728 6402911	*FHOD3;PRKN;TBC1D19;ACSS3;ARHGEF28;ZFYVE1;B CL2L13;FGF9;OPA3;KIF21A;THSD7A;ATP6V1E1;DI P2C;TEAD1;PACRG;TANGO2;TTC7B;MITF;ITFG1;MO B1B;AFG3L2;TBC1D1;RCAN2;RRAGD;ATP6V1B2;SPI RE1;ALPK3;ATP6V0D2;CNTNAP5;CPEB4;CDS2*
STARD13 -AS	31/100	0.0323075728 6402911	*ZNF891;NFAT5;INO80D;ANKRD36;KMT2C;RGPD6;ZB TB20;SLC9C1;ACTR3C;ATXN1;ZNF407;ZNF124;MBD 5;MON2;VPS13C;DNAH14;OR1L6;RC3H1;VPS13B;PL EKHA3;ASH1L;PHC3;VMP1;ZNF717;AGO3;ZNF678;B IRC6;BRWD1;KIAA0825;ANKRD36B;TNRC6B*
EDRF1-AS1	31/100	0.0323075728 6402911	*ANKRD17;SETD2;INO80D;KMT2C;TUT4;ZNF518A;RG PD8;PRDM10;RGPD4;BTAF1;HECTD4;NSD1;DIP2A;C EP192;ZNF169;BPTF;USP24;MGA;RC3H1;VPS13B;A SH1L;ARID1B;SFPQ;ELF2;AGO3;KANSL1;RFX7;BIR C6;ZNF236;ANKRD36B;TNRC6B*
BRWD1-AS1	31/100	0.0323075728 6402911	*ZNF397;ZNF891;CATSPER2;ANKRD36;OR4K2;GREB1 L;OR9Q1;KIAA1328;TMEM225;ZNF606;ZMYM4;TRPS 1;BPTF;ANKRD26;SLX4IP;MGA;DNAH14;VPS13B;AS H1L;PBX1;GATAD2B;GOLGA6C;GOLGA6B;ZNF717;GO LGA8F;GOLGA6D;TTC3;ZNF678;BRWD1;ZNF236;ANK RD36B*
ARHGAP3 1-AS1	31/100	0.0323075728 6402911	*NLGN1;MAML2;PPM1L;CTTNBP2;RNF38;ADAM22;ZBT B20;IQCJ- SCHIP1;EPC2;SOX6;EPHB1;WASF3;BBS2;RFTN2;ZN F462;ARNT2;HFM1;ZHX3;TMEM178B;TCF12;ZFP90;*

			PYGO1;PTPRD;ATAT1;CCDC88A;ARHGAP31;TBC1D5;RRAGD;SPIRE1;ASB3;CREB5
IQCJ-SCHIP1-AS1	31/100	0.03230757286402911	*KMT2E;NFAT5;INO80D;ANKRD36;KMT2C;RGPD6;ZBTB20;RGPD5;RGPD8;BAZ2B;LPP;SYNE1;POTEM;POTEH;POTEG;ZNF124;ZFHX3;MBD5;MGA;OR1L6;RC3H1;VPS13B;ASH1L;PHC3;AGO3;SETBP1;NFIA;BIRC6;UTRN;ANKRD36B;TNRC6B*
ZBTB20-AS4	31/100	0.03230757286402911	*KMT2E;NFAT5;GALNT13;INO80D;CHD9;KMT2C;ADAM22;ZBTB20;BAZ2B;AKAP11;SHOC1;SCAPER;RFTN2;MBD5;RALGAPA1;ERCC6L2;TCF12;YLPM1;VPS13B;ASH1L;PHC3;GATAD2B;ZEB1;FCHSD2;APC;RFX7;RUFY2;TTC3;CCSER2;WDFY3;TNRC6B*
FAM13A-AS1	31/100	0.03230757286402911	*NRP1;GALNT14;ENPEP;FLT1;PRKAA2;ARHGEF28;LDB2;SLC6A3;CNDP2;EPS8;ARHGAP42;EPB41L4A;FCHO2;ENPP3;EGLN3;ARHGEF12;KSR1;INSR;COL23A1;CRIM1;ANO6;MYO9A;ARHGAP24;ZNF33B;SNRK;NUMB;RAPGEF2;PLIN2;ALPK2;ZNF611;SMPDL3A*
NNT-AS1	31/100	0.03230757286402911	*GALNT13;PHLPP1;ADAM22;GRIK4;FMN2;TRIM9;MAP2;DNER;NCAM1;SOX6;TRIM23;GRIA4;BBS2;RFTN2;ARNT2;ZHX3;CADM2;TTC33;PNPLA8;TMOD2;MAGI2;LSAMP;FBXL17;PRKCA;APC;ADGRB3;PPP2R2B;RRAGD;SPIRE1;MAPRE2;ASTN1*
SLIT2-IT1	31/100	0.03230757286402911	*NFAT5;CUL5;PPM1L;RGPD6;ZBTB20;RGPD5;RGPD8;KIAA1328;PLCZ1;THSD7A;RNF152;ZNF124;UNC13C;MBD5;STPG2;ERCC6L2;PDE4D;VPS13C;VPS13B;ADAM32;PLEKHA3;PHC3;MOB1B;INPP4B;SYT10;LRRC9;WDPCP;BRWD1;DGKI;CNTNAP5;ZNF431*
SEMA6A-AS1	31/100	0.03230757286402911	*OCA2;NLGN1;PHLPP1;CRACD;TRPM1;ZNF608;ZNF280B;MXI1;ANKFY1;PHACTR1;SOX6;DIP2C;SRGAP2;JARID2;DISC1;SRGAP2B;PKNOX2;MYEF2;MYO10;MICAL3;MYO5A;TET1;CABLES1;MITF;GPR137B;IGSF11;ITPKB;NRG3;PWWP3A;UBAP1L;MDGA2*
SH3TC2-DT	31/100	0.03230757286402911	*SHC4;FMN1;LYST;PPM1F;COL19A1;STK10;SDCBP;DSTYK;GNPTAB;SCFD2;GNG7;MGAT5;ABL2;PHACTR1;ZNF106;HMCN1;SRGAP2;ANKRD28;COL22A1;MOK;MYO5A;NFATC2;MITF;LHFPL2;S100B;IGSF11;MOSMO;NIN;MELTF;B4GALT6;CNIH3*
KCNIP1-AS1	31/100	0.03230757286402911	*CRACD;MEGF11;TMPRSS3;AGAP1;ILDR2;SLC35F1;FAM171A1;RIC8B;SV2C;MAN2A2;SNTG1;CAPN5;DNER;TSPAN3;CTSE;FAM81A;PAK5;KLHL29;NTRK3;RANBP17;TCF12;CACNA2D3;PRKCA;ARHGAP26;SEZ6L;CDC42BPA;MAPK8IP1;ATAT1;LRFN2;CLDN10;FAT3*
ANO3-AS1	31/100	0.03230757286402911	*ACSS3;CUL5;PPM1L;SLC5A12;GLYAT;PEPD;HS6ST3;CDH7;PBLD;AP5M1;PLCZ1;THSD7A;SLC17A1;RNF152;TINAG;UNC13C;CUBN;STPG2;ABCA5;PDE4D;SLC2A13;WDR72;MOB1B;INPP4B;MSRA;PLCXD3;SYT10;LRRC9;DGKI;CNTNAP5;CPEB4*
NKAIN3-IT1	31/100	0.03230757286402911	*ADCYAP1R1;PHLPP1;HEPACAM;LUZP2;CTNND2;NRXN1;KLHL32;GRIK4;FMN2;NDRG2;TRIM9;NKAIN3;CDH20;FUT9;NCAM1;KCNN3;WASF3;JAM2;GRIA4;RFTN2;NTRK2;DTNA;KCND2;CADM2;TMOD2;LSAMP;APC;ADGRB3;PPP2R2B;APBA2;ASTN1*

Table S3. The overlap between the rDNA-contacting genes co-expressing with lincRNAs obtained from untreated K562 cells (1276 genes) and for HEK293T cells (652 genes). Related to the Venn diagram presented in Figure 1A.

Names	total	elements
HEK293T – K562	346	*SAMD4A ERBB4 KCNMA1 PKNOX2 ZHX3 APBB2 LPP ATRX ADAMTS18 MACF1 FAM214A CTNND2 MITF RTN1 TRIM23 WSCD1 MED13L NRP1 TEAD1 NFIA FRY CDH13 MDGA2 ABL2 DIP2C UTRN PHACTR3 MAML2 SLC8A1 DACH1 EML1 SLC2A13 ANKRD6 RERG SIAH3 SNTG1 CTIF TBC1D5 GREB1 FRMD5 LDLRAD4 STARD13 PCDH7 MMP16 SLC40A1 LRRC4C CADM2 MALRD1 SLCO3A1 PDZRN3 PIK3C3 MYEF2 DCLK1 SLC9C1 CDC42EP3 HMCN1 ZFAND4 GRIK2 IGSF11 RGL1 NKAIN3 NRIP1 NCAM1 ITGA1 CLSTN2 TCF12 CCNG2 KDM4B GNG12 TANC1 CORO2B TTLL11 EVI5 ITGA8 VPS41 GRIK4 ZBTB20 ZNF407 ASB3 TCF4 GABRG1 PBX1 FAM171A1 PHACTR1 PIK3R3 SLC39A12 DISC1 FMN1 RALGPS1 ARHGAP42 PEAK1 EYA1 PHF21B SLC35F1 ADAMTS19 GPR158 GABRB1 NDRG2 TMEM241 APBA2 TTC3 ASAP1 SGSM1 ST8SIA1 UNC79 FYN ANK2 SLC1A2 CADPS CSMD3 DLGAP1 LRBA GRIN2B PHC2 STK32A GRIA1 OTUD7A NEGR1 RABGAP1 FGF12 DGKB CACNG2 EBF1 TULP4 S100B TOX PCDH15 ESR1 ARHGAP12 KLF12 KCNN3 ABCB5 LUZP2 MEGF11 PDE4D MTMR10 LRIG1 ERC2 PRKACB GNG2 PRUNE2 TRIM9 FCHSD2 LAMA1 CDH11 SETBP1 CDS2 DOCK4 MAST4 ITPR2 BRINP1 NRXN1 NTRK3 BCL2L13 WDPCP MAGI1 RAPGEF4 CNKSR2 SNX29 ADCYAP1R1 EPHB1 PRICKLE2 DPP6 LSAMP CTTNBP2 GRID1 GREB1L CREB5 TNRC6B ZDHHC17 ABCC9 GSG1L DCDC1 CNTN3 CACNA1C PRKAA2 CCSER2 TMEM178B DNM3 BBS2 ASXL3 DPF3 FLT1 SCAPER EDIL3 EXOC4 DLG2 NOL4 PPP1R12B SACS SCFD2 RORA PTPRD CDC14B LRRTM4 TLN2 MYO9A FOXN3 NTRK2 LOXL2 WDFY3 GRIK1 SOX5 PRKG1 DSCAM DGKI FTO UBL3 THSD7A NBEA MXI1 AFAP1 NCAM2 TTC28 MAGI2 NELL1 AKAP6 ANKRD30B CSMD2 SRGAP2B IQCJ–SCHIP1 RNF152 CNTN1 DOCK10 OPCML GRM5 ENPEP PLEKHB2 CA10 ANKRD36 LDB2 PRKD1 NRG3 ATP8A1 NLGN1 PTPRG OR9Q1 JAM2 MICAL3 GRID2 LRRC7 LRP2 SEMA6D SYNE1 RALGPS2 FER SNRK MON2 RYR2 FBXL17 MAP2 SUSD4 PRLR PTPRA FAT3 GRIK3 CACNB2 STXBP4 MED15 MTPN EFCAB6 ESYT2 MAPRE2 SOX6 SGCD PDE4DIP MSRA RIC8B PCDH9 MPDZ VCL SEZ6L VCAN ATAT1 CNTNAP5 RBMS3 RAPGEF2 ZMYND11 RAPGEF5 INSR RGS6 SRGAP3 AKAP13 IMMP2L CHCHD6 ATXN1 GABRG2 KIAA1328 UNC13C NRXN3 HS6ST3 PGM5 RALGAPA1 ASTN1 DLGAP2 NSG1 CLIP1 CPE KCND2 SEMA5A CABLES1 ATP8A2 CALD1 SLC24A3 LHFPL3 MPRIP ARHGAP24 GRIA4 CNIH3 DOCK3 CTNNA2 TPH2 APC GPC6 PARD3B CHN1 RELN VPS13C TRPS1 HS3ST4 CEP112 TBC1D9 ROR1 STON1– GTF2A1L SLC4A4 KAZN TNR DTNA CRB1 VAV3 NPAS3 PRKCA KMT2C INPP5A ZNF678 KCNE4 KCNS3 FMN2 ERC1 XYLT1 KIAA0825 AGO3 ALPK2 CCDC88A ARNT2 AFF3*
K562	930	*FSTL1 TBC1D19 HPSE2 SLMAP FAM219A MAP4 TSPAN11 PDE6A KLHL13 HIVEP1 OR1L6 ANKRD36B NBN PRTG RNF38 FYB2 CUBN SEC24D SLC17A1 MPPED2 KMT2E PAK1 EPB41L4A PCMTD2 PELI2 DNAH14 FRMD3 SLC6A11 SCAF8 COL22A1 ATP9B MYO9B TRIO ZNF385D TC2N SETD2 KIRREL1 PWWP3A ITIH5 PACSIN2 SEC23B ZEB1 SLC15A5 FAT4 PARN AMBRA1 CHD9 SYNE2 EPN2 NETO2 PDE1C SLC15A2 DOP1B ZNF208 TTC37 NUP210L TSPAN3 IGSF3 ALPK3 FBXW8 MYO3B EVC ZFYVE1 ZNF718 RC3H1 RPS6KA5 POTED LHFPL2 EPS8 DIP2A TANGO2 SFPQ MAB21L3 TAOK3 HERC2 ZSCAN30 LRFN5 ZNF66 OR4C46 HOOK3 GPR137B PRKCB SLC23A2 ARHGEF7 ROCK2 GPC5 ACACA ZNF704 ARHGEF12 SAMD12 LYPLA1 MAN2A2 CMIP LNPEP PRR16 C1QL3 CDK12 POU1F1 HTR2C ZNF397 TSPAN13 KCNC1 DUX4 GALNT13 DYSF CCDC141 STAU2 NEK4 CACNA1E YTHDF3 SPATA17 SYT10 ZBTB38 PAFAH1B1 TMEM63C FYCO1 LPGAT1 CNTN4 USP14 EXOC6B HECTD2 ST8SIA4 GON4L AFG3L2 CNKSR3 ZNF648 SEMA3A IQCM USP49 TRIM2 PLIN2 SLC8A3 DNAH6 RFX3 MGAT5 RBFOX1 ARFGEF3 FAM167B BCL2 KL PHC3 MYO5B ALCAM USP24 CCSER1 ERLIN2 PPP1R9A ATP11C LIMD1 RAP1GAP ADAM32 DNAH11 SPOPL ADAMTS9 CDC42BPA ANKRD28 MAGI3 SLC13A4 NIPBL CEP120 POTEG ZZEF1*

CHD6 FRA10AC1 FGD4 FAM135B FSIP1 SNX25 APMAP CCDC186 GSAP SHOC1
MBD5 MYO5C KIF16B SDC2 INO80D KDM5A ZNF382 GOLGA6D NDUFAF6
SLC25A21 MARCHF6 SIPA1L2 ITSN2 RCAN2 ADGRL2 RGPD5 ODR4 GDAP1L1
HIRA UFL1 PAPPA EPHA4 NEBL DIDO1 SYCP1 COL4A3 MYO10 ADAMTS2 PJA2
PRKAA1 RASGEF1C TAFA4 NAALADL2 TSHZ2 FRYL TOM1L2 PBLD IREB2
KIAA1549L ABCC4 FAM126B MYT1 ASH1L ATP10A HECTD4 ELOVL7 BICRAL
TTC21B SORBS2 NEK6 MEGF10 ABCD2 OPA3 MOB1B COG2 ZC3HAV1 ARHGAP28
TMEM25 RAB38 CLTCL1 SV2B HECW2 RIC3 ANKRD20A1 ZNF891 VMP1
SLC25A18 KSR1 RALGAPA2 RORB PIEZO2 VSTM4 KIAA1217 RAB27B ZNF236
CTSB MORC3 SVIL ANKS1B NTM TTLL7 LYST FRMPD4 SLC16A9 COL23A1
LRRC2 NSD1 NEDD4L EDAR PLEKHA3 ATP2B2 ANKRD26 PLS1 FRMD6 RGS20
HDGFL3 CNDP2 SH3KBP1 AGO2 NALCN ABCC12 CREBBP DSTYK ZBTB16 PRMT8
LPCAT2 XRCC4 BZW1 FBXL20 FAM193A KIF21A B4GALT6 SLIT3 RGS7 MAP7
FHIT POTEJ SGTB ANTXR1 ZNF518A SHISAL1 SRGAP2 DCAF1 NSG2 CD2AP
LRP1B ARSB RGS8 KALRN TRABD2B ZNF124 KIAA0319L BMP7 TAFA5 SPRED1
AP5M1 MYO5A SPEN PLD5 NAV2 KIAA0753 ANKRD17 TSPAN33 PPP2R2C
GARNL3 KANSL1 BTBD9 SPATA48 NPIPA1 TPM1 COL19A1 LINGO1 DPH6
CRIM1 TNKS SMPDL3A LRFN2 OR2T2 NOTCH2 FLNB IMPA2 SCAI ZFP90 MADD
CLDN10 LTN1 GABRG3 KIAA0232 FKBP5 TINAG NFAT5 SRGAP2C DIRAS2 AQR
FLI1 TMOD2 PLCXD3 SLC44A5 FAM107B ANAPC1 ZSWIM6 KCNAB1 KLHL4
CDHR3 TJP1 ARHGAP26 ITGB8 PTPRT TRHDE PTPN4 RIMS1 GXYLT2 HIPK3
WSB1 TMEM225 POR SGMS1 PARVB JCAD AIF1L GLI3 GOLGA8S ZNF780B
RBPMS2 GAST LRRC9 WDR26 ATP6V1E1 FRMD4A SLC37A1 PNPLA8 SUPT16H
DTWD2 LMX1A JAZF1 SGCG FBN1 WWOX NELL2 RSPH3 WASF3 LONP2 ARID1B
MTUS1 HYDIN TRAPPC10 KHDRBS2 TSPAN2 CPQ PRRC1 VPS13D AUH ZNF292
MOSMO SPIN1 EHBP1 SNTB2 KPNA1 FUT8 NEK10 ZNF74 ANKRD31 PIAS1
CDH20 LAMC1 ST6GALNAC3 ZNF611 ZNF521 SRP9 PBX3 PTAR1 PCNX1 MYOCD
GALNT10 TRIM58 PRELID2 HMGA2 HHAT KLHL32 GOLGA8J ZMYM1 FHOD3
UBE2QL1 UBAP1L PARP8 PLPPR5 AVL9 ZNF287 FER1L6 RERE CACNA2D3
SEL1L ZNF608 ZNF33B SLC4A10 PHLPP1 SYN2 ATL1 PTCD2 MYO1E SLC7A2
PKN2 ITGA4 CPA6 HFM1 HLCS ACSS3 ROCK1 STK10 HERC1 CFAP70 DOCK1
MGAM GLIS1 GAPVD1 ARHGAP31 UBR1 RXRG ETNPPL ARHGEF11 AMPH INTS7
RGPD4 SOGA1 UHRF1BP1L SORCS1 COL4A2 PACRG SYT1 GRB10 ARHGAP32
SLC27A6 PRKN MUC19 FOXP2 TRPM7 SIAH2 ADSS2 RB1CC1 IKBIP NPHP4
LATS2 DOCK9 FOXJ3 PDE2A CBLIF IL17RD ATP6V1B2 GIPC2 KCNJ1 CDYL2
TTR BBS9 PTPRN2 SLC5A12 NCS1 RANBP3L TG HDAC4 ADGRB3 ADAM29
INPP4B DGKG ZNF717 TRPC5 MYO3A KIAA0513 ENTHD1 AMFR USP31 PLCB1
PLCB4 HIVEP2 MAPK1 LAMB1 SDCBP ATP9A LCLAT1 BPTF TASOR2 CUL5
BIRC6 PLXDC2 SLC6A1 CDH9 EPC2 NFIB DIP2B TUT4 NLK SPOP EGFR
GOLGA6B PPFIA2 POTEC ADAM28 STXBP6 PTPRQ CYP4Z1 MGA CLCN5 BCR
SLC49A4 LARGE1 ANKRD36C TRAPPC8 MBNL1 RTTN FGF9 ACSM2A STX12
TRAPPC11 NIN FANCM ARHGEF28 PLCL1 SLC1A1 MELTF HPCAL1 FUT9
RAB3GAP2 GALNTL6 MYT1L TMPRSS3 MOK PXDNL ANKFY1 TBC1D1 SLC37A2
SORCS3 LIMCH1 PDP2 SLC12A1 LRRC49 CMPK1 SCN2A ERP27 BAZ2B EML6
POTEB3 ZNRF3 POU6F2 CRACD GNAQ ZNF449 AGL BAZ2A TENM3 ITPKB
MEOX2 MED1 MTMR7 GNPTAB EPHA6 DDX6 CTSE TRPM1 CACNG3 IPCEF1
GLIS3 FNDC3A SPIRE1 PHACTR2 RPRD1A COPS8 AKAP9 ARAP2 AIMP1
NECAB1 COL14A1 WDR72 PLCZ1 SNX30 CPEB4 RBM47 PID1 ABL1 NCOR1
JARID2 PIGN PRDM10 PAQR5 EBF2 SHROOM3 FBXO41 MSI2 ELMO1 FAM241A
RANBP17 ERBIN PRSS23 ETS1 PCMTD1 PPM1L CABIN1 ZNF573 MBTPS2
KHDC4 SMOC1 PAK5 PDZRN4 SETDB2 HRH1 RABEP1 ST6GAL2 TMEM116
TOGARAM1 SCAMP1 ELF2 IL17RA PTCHD4 LDLRAD3 SLX4IP PKHD1L1 ALKAL2
PLPPR1 CEP192 MCC GLYAT TGFA GALNT14 ZFYVE26 ZNF160 ZNF280B
GOLGA8F DHX29 HADHB NFATC2 DST NUMB STPG2 TNRC6C CELF2 CD70
TM9SF2 PDXDC1 DEFB108B NTNG1 WSCD2 ZNF606 VSTM2A GNG7 MTMR2
ZNF804B CAPN5 MLLT10 KCNH5 FBXL7 LRP12 LRRC8B FGF10 CSNK1G1
GOLGA6C ZNF169 KIF13A FAM189A2 NOS1AP CADM1 KLHL29 ABCA4 POTEM
RC3H2 SMTN TCERG1L PLEKHA2 SCG3 SYNPR YLPM1 TRPM3 ATF6 EYS ZMYM4
SP3 ITFG1 IPO11 STK32B DIPK1A ZNF106 DEPTOR ZDHHC21 XKR6 POTEB2

		VCAM1 TM9SF3 POTEH DDHD1 RGS12 ICA1 SRFBP1 MATN2 CDH7 IFT81 SHANK2 PDK1 UNC80 CRACR2A WDR41 ILDR2 ZNF615 ATP6V0D2 MIPOL1 PPIP5K2 SYNJ1 PHF20L1 KLF15 TTC6 PPP2R2B DENND4C UNC5D KDM1B ZNF431 ARFGEF1 FAT1 PATJ ITGA9 ENPP1 ULK2 IARS2 S100PBP TANGO6 CELSR2 ZNF462 RIMS2 CFAP97 PTPRJ TET1 CATSPER2 RHPN2 ANKRD30A PPM1F KCNQ3 ANKRD33B SCN8A ZFHX3 DENND2B SNX8 EGLN3 CHSY3 LMX1B RRAGD FNDC3B GFRA1 SHLD2 ATRNL1 SPHKAP GPR156 ZMAT4 BMPR1B MARCHF8 RGPD8 SHC4 MAPKBP1 FCRLA ELP2 ZNF613 UST TLL1 PRDM15 GOLGA8T UBE3A KITLG PYGO1 SV2C TYW1 HSF5 AGAP1 FREM1 ADAM22 GSE1 MAP4K4 EFR3A CERS6 ZNF112 HTR2A KIF21B PRAME NCOA7 ANKRD18A APLF GALNT1 DNER ABCA5 MARCHF1 RFX7 ADGRV1 MACROD2 GATAD2B AKAP11 INO80 BNC2 ANXA4 SLC14A1 MFSD9 TTC33 RANBP2 EOGT KCNJ15 NAT1 POTEB CYBRD1 AUTS2 STRN CRISPLD2 PPP2R3A EIPR1 FAM81A MTMR3 BMP2K SNAI2 CHCHD2 CYFIP2 ADAMTSL1 CCDC126 CLDN18 SYT16 NDFIP1 ADCY9 SLC25A48 MSANTD4 PTPN13 SNAP91 OCA2 CELF4 AKT3 ST8SIA6 GEMIN5 IL1R1 BCAS3 MSANTD2 FCHO2 RFTN2 ANO6 KTN1 ERCC6L2 RUFY2 HEPACAM OR4K2 USP8 USH1C MRTFB DNAH5 SUSD1 HIPK1 CNTN6 ENPP3 CLIC6 ACSM2B HSPA12A TTC7B RGPD6 PEPD APP CHST3 PDLIM5 RPS6KA3 BTAF1 BRWD1 SMAD5 SLC6A3 DNAJC13 NYAP2 PSD3 VPS13B ABCA13 ASB2 EYA2 MAPK8IP1 ADGRB1 CNOT6L MEF2C GHRH TRAPPC6B RAP1GDS1 ZNHIT6 SPOCK1 ACTR3C MYB SLC39A6
HEK293T	306	*ANKS1A RYR3 BBOX1 ZPLD1 PANX1 BID ZNF799 DCHS2 RGMB PPP1R14A SIDT1 RLBP1 TECTA RAP1A KCNA6 MSRB3 DPYSL2 MAP3K3 SYNPO2 CYLC2 SLC22A2 ST6GALNAC5 BCAN ACTR8 ZNF510 STX8 ACYP2 BMPR1A PALLD DSCAML1 PLN CECR2 MRVI1 SLC16A7 C2CD3 KATNAL1 SLC16A12 MUC16 CREG2 BTBD17 MARK1 PI4KA OPHN1 ACBD5 SORT1 FNIP1 PCDHGA7 SLC24A5 CDH10 KIAA1324 MYH9 RNF180 TMEM117 CHST11 MEF2A SLC17A3 TSPAN7 PAQR8 GPATCH2L PCDHGA1 POTEE QKI FLNC LRRTM3 FGF1 CHRM1 CNN3 PKHD1 RBMS2 ABCC11 MYO16 ZNF366 ZNF540 STON1 LRRC53 GANC ACAD11 SCN1A GNAO1 SNN CCDC170 PCDHGB4 TOR1AIP1 ITSN1 CHL1 VANGL2 P2RX6 SPON1 RAB23 PREX2 ZNF516 PI15 OR11L1 GDAP1 DNAJB4 TMEM189 RHBDL3 PCDHGA10 XKR7 EDNRB SPATA6 MYH11 NF1 FAM49A KBTBD11 SHPRH PCDHGA5 FPGT-TNNI3K GAD2 ABI3BP CCDC144A TUB SCAMP5 PCDHGB2 SEL1L2 PCDHGA9 JPH4 NAPEPLD DENND2A SPECC1 SIK2 FAM155A DPY19L2 DENND5B TNS1 TRPC4 MS4A15 FBXL5 OR10K2 DOK6 DRP2 MANEAL ADCY8 FHL5 ZBTB41 PCDHGA12 NFIC ELP3 TRIM51 GRIA3 ARHGAP10 SHC3 IL1RAPL1 PCDHGA4 PANK3 OSGIN2 CLASP2 CAMK2G FGF14 ZMAT3 SNX7 SPRED3 TMEM100 RNF165 DAAM2 PLXNA4 KIAA1109 KIAA0040 MIPEP NDE1 DNAJC6 FERMT2 DACH2 VPS26B ZC3H13 EMCN KDR PCDHGA2 FAM13C DENND5A SEMA5B CC2D2A DAB2 TPRG1 GPR21 PCDHGB7 FAM184B ZNF493 METTL9 YAF2 KIDINS220 MGAT2 CHD7 SBF2 POTEF GTF2A1L FARP2 MYLK ITIH6 ACSBG1 JMY POLR2F TTC39A CACNA1A TSHZ3 MCOLN3 IGDCC4 WDR7 MGAT4C ZNF501 EPG5 LGI1 KHDRBS3 SOX8 CALCRL ABAT ADORA3 ANKRD44 SLC16A4 CELSR1 TNNI3K UNC13A FAM172A ZNF483 PCDHGA8 NCOA1 EPM2A BICC1 IFT88 ARHGAP5 ZFP2 CCDC144NL ZNF720 METTL24 RHOJ RBFOX2 FBXW11 CRMP1 PDE4B MFSD12 ZNF730 ARID4A FILIP1L TMEM108 DPP8 RAB30 MKRN3 IQCJ ISOC1 SPATA5 NVL SLC1A3 SHROOM4 PCDHGA11 ARHGEF6 TGFBR3 SPIN3 ST3GAL3 PTPRM KCNE2 CAB39L GPC3 PCDHGB6 DOK5 DMD ADCY2 CRYL1 NOVA1 FAM114A1 PAX3 GRM4 LRP4 SH3BGR PCDHGB3 TIMP2 SPATA13 ARHGAP35 IGF2R TMEM132B TGFB1I1 RFX4 SH3GL2 FBXL18 LAMA4 CASQ2 ZNF91 BAALC PMP22 PEX5L P2RX7 DOCK7 ST7 FMNL2 ARMCX4 RGS7BP FAM110B FBXO32 PCDHGA6 SYNM AR MAPK4 ARHGEF10 GABRA3 ZCWPW2 PCDHGB1 LRRC3B GPR75 REEP2 CDKL1 PCDHGA3 SLC5A8 GRIA2 SLC25A53 WDR63 WLS SPEF2*

Table S4. GO associations with biological processes associated with 346 overlapping rDNA-contacting genes that are associated with lincRNAs in both K562 and HEK293T cell lines. The search was performed using g:Profiler (https://biit.cs.ut.ee/gprofiler/gost). Related to Figure 1B.

GO.ID	Description	padj	Genes
		BP	
GO:0048731	system development	9.5101791541 70174e-27	ERBB4,APBB2,ATRX,ADAMTS18,MACF1,C TNND2,MITF,RTN1,NRP1,NFIA,FRY,CDH 13,MDGA2,ABL2,SLC8A1,EML1,STARD13 ,MMP16,SLC40A1,LRRC4C,MYEF2,DCLK1 ,NRIP1,NCAM1,ITGA1,CLSTN2,TCF12,K DM4B,ITGA8,TCF4,PBX1,PHACTR1,PIK3 R3,SLC39A12,DISC1,FMN1,EYA1,GPR15 8,GABRB1,NDRG2,APBA2,ASAP1,FYN,AN K2,SLC1A2,CSMD3,GRIN2B,GRIA1,NEGR 1,FGF12,S100B,TOX,PCDH15,ESR1,ABC B5,MEGF11,LRIG1,PRKACB,LAMA1,CDH1 1,BRINP1,NRXN1,NTRK3,WDPCP,EPHB1, LSAMP,GREB1L,ZDHHC17,ABCC9,CACNA1 C,DNM3,BBS2,DPF3,FLT1,SCAPER,RORA ,PTPRD,MYO9A,FOXN3,NTRK2,LOXL2,GR IK1,SOX5,PRKG1,DSCAM,THSD7A,NCAM2 ,MAGI2,NELL1,AKAP6,SRGAP2B,CNTN1, DOCK10,OPCML,GRM5,ENPEP,CA10,LDB2 ,PRKD1,NRG3,NLGN1,PTPRG,JAM2,GRID 2,LRP2,SEMA6D,SYNE1,FER,RYR2,FBXL 17,MAP2,PRLR,FAT3,MTPN,SOX6,SGCD, PCDH9,VCL,SEZ6L,VCAN,ATAT1,RAPGEF 2,RAPGEF5,INSR,AKAP13,IMMP2L,ATXN 1,GABRG2,NRXN3,ASTN1,CPE,SEMA5A,C ABLES1,ATP8A2,CALD1,ARHGAP24,CTNN A2,APC,CHN1,RELN,TRPS1,ROR1,TNR,C RB1,VAV3,PRKCA,XYLT1,ALPK2,CCDC88 A,ARNT2
GO:0034330	cell junction organization	2.0237919758 05433e-24	ERBB4,APBB2,MACF1,CTNND2,NRP1,NFI A,CDH13,LRRC4C,PDZRN3,CLSTN2,TANC 1,CORO2B,DISC1,FMN1,PEAK1,GPR158, ASAP1,FYN,ANK2,GRIN2B,GRIA1,NEGR1 ,DGKB,CACNG2,ERC2,CDH11,NRXN1,WDP CP,CNKSR2,EPHB1,CTTNBP2,GRID1,DNM 3,PTPRD,TLN2,MYO9A,NTRK2,DSCAM,NB EA,DOCK10,GRM5,NRG3,NLGN1,GRID2,F ER,PTPRA,CACNB2,MAPRE2,MPDZ,VCL,S EZ6L,RAPGEF2,INSR,GABRG2,UNC13C,N RXN3,CTNNA2,APC,RELN,TNR,PRKCA,ER C1
GO:0007399	nervous system development	4.5124030138 77728e-24	ERBB4,APBB2,ATRX,MACF1,CTNND2,RTN 1,NRP1,NFIA,FRY,MDGA2,ABL2,EML1,L RRC4C,MYEF2,DCLK1,NCAM1,ITGA1,CLS TN2,TCF12,KDM4B,ITGA8,TCF4,PBX1,P HACTR1,SLC39A12,DISC1,EYA1,GPR158 ,GABRB1,NDRG2,APBA2,ASAP1,FYN,ANK 2,SLC1A2,CSMD3,GRIN2B,GRIA1,NEGR1 ,FGF12,S100B,TOX,PCDH15,LRIG1,PRK ACB,LAMA1,CDH11,BRINP1,NRXN1,NTRK 3,WDPCP,EPHB1,LSAMP,ZDHHC17,DNM3, BBS2,DPF3,RORA,PTPRD,MYO9A,NTRK2, GRIK1,SOX5,PRKG1,DSCAM,NCAM2,MAGI

			2,NELL1,SRGAP2B,CNTN1,DOCK10,OPCM L,GRM5,CA10,LDB2,PRKD1,NRG3,NLGN1 ,PTPRG,JAM2,GRID2,LRP2,SEMA6D,SYN E1,FBXL17,MAP2,FAT3,MTPN,SOX6,PCD H9,VCL,SEZ6L,VCAN,ATAT1,RAPGEF2,R APGEF5,IMMP2L,ATXN1,GABRG2,NRXN3, ASTN1,SEMA5A,CABLES1,ATP8A2,CTNNA 2,APC,CHN1,RELN,ROR1,TNR,CRB1,CCD C88A,ARNT2
GO:0007275	multicellula r organism development	1.7159463118 780894e-22	ERBB4,APBB2,ATRX,ADAMTS18,MACF1,C TNND2,MITF,RTN1,NRP1,TEAD1,NFIA,F RY,CDH13,MDGA2,ABL2,SLC8A1,DACH1, EML1,SIAH3,STARD13,MMP16,SLC40A1, LRRC4C,MYEF2,DCLK1,NRIP1,NCAM1,IT GA1,CLSTN2,TCF12,KDM4B,ITGA8,TCF4 ,PBX1,PHACTR1,PIK3R3,SLC39A12,DIS C1,FMN1,EYA1,GPR158,GABRB1,NDRG2, APBA2,ASAP1,FYN,ANK2,SLC1A2,CSMD3 ,GRIN2B,GRIA1,NEGR1,FGF12,S100B,T OX,PCDH15,ESR1,ABCB5,MEGF11,LRIG1 ,PRKACB,LAMA1,CDH11,BRINP1,NRXN1, NTRK3,WDPCP,ADCYAP1R1,EPHB1,LSAMP ,GREB1L,ZDHHC17,ABCC9,CACNA1C,DNM 3,BBS2,DPF3,FLT1,SCAPER,EXOC4,ROR A,PTPRD,MYO9A,FOXN3,NTRK2,LOXL2,G RIK1,SOX5,PRKG1,DSCAM,THSD7A,NCAM 2,MAGI2,NELL1,AKAP6,SRGAP2B,CNTN1 ,DOCK10,OPCML,GRM5,ENPEP,CA10,LDB 2,PRKD1,NRG3,NLGN1,PTPRG,JAM2,GRI D2,LRP2,SEMA6D,SYNE1,FER,RYR2,FBX L17,MAP2,PRLR,FAT3,MTPN,SOX6,SGCD ,PCDH9,VCL,SEZ6L,VCAN,ATAT1,RAPGE F2,RAPGEF5,INSR,AKAP13,IMMP2L,ATX N1,GABRG2,NRXN3,ASTN1,CPE,SEMA5A, CABLES1,ATP8A2,CALD1,ARHGAP24,CTN NA2,APC,CHN1,RELN,TRPS1,ROR1,TNR, CRB1,VAV3,PRKCA,XYLT1,ALPK2,CCDC8 8A,ARNT2,AFF3
GO:0048699	generation of neurons	1.1784529055 07181e-18	ERBB4,APBB2,MACF1,CTNND2,RTN1,NRP 1,NFIA,FRY,MDGA2,ABL2,EML1,LRRC4C ,MYEF2,DCLK1,NCAM1,ITGA1,TCF12,TC F4,PBX1,PHACTR1,SLC39A12,DISC1,EY A1,GABRB1,ASAP1,FYN,CSMD3,NEGR1,S 100B,TOX,PCDH15,LAMA1,CDH11,BRINP 1,NRXN1,NTRK3,WDPCP,EPHB1,ZDHHC17 ,DNM3,RORA,PTPRD,MYO9A,NTRK2,SOX5 ,PRKG1,DSCAM,NCAM2,MAGI2,CNTN1,DO CK10,OPCML,PRKD1,NRG3,NLGN1,PTPRG ,GRID2,LRP2,SEMA6D,SYNE1,MAP2,FAT 3,MTPN,VCL,VCAN,ATAT1,RAPGEF2,NRX N3,ASTN1,SEMA5A,ATP8A2,CTNNA2,CHN 1,RELN,ROR1,TNR,CRB1,CCDC88A
GO:0050808	synapse organization	3.2701582847 48875e-18	ERBB4,APBB2,CTNND2,NRP1,NFIA,LRRC 4C,PDZRN3,CLSTN2,TANC1,DISC1,GPR1 58,ASAP1,FYN,GRIN2B,GRIA1,NEGR1,D GKB,CACNG2,ERC2,NRXN1,CNKSR2,EPHB 1,CTTNBP2,GRID1,DNM3,PTPRD,NTRK2, DSCAM,NBEA,DOCK10,GRM5,NRG3,NLGN1 ,GRID2,CACNB2,SEZ6L,INSR,GABRG2,U

			NC13C,NRXN3,CTNNA2,RELN,TNR,ERC1
GO:0048856	anatomical structure development	9.2831091162 92847e-18	ERBB4,APBB2,ATRX,ADAMTS18,MACF1,C TNND2,MITF,RTN1,NRP1,TEAD1,NFIA,F RY,CDH13,MDGA2,ABL2,UTRN,SLC8A1,D ACH1,EML1,SIAH3,LDLRAD4,STARD13,M MP16,SLC40A1,LRRC4C,MYEF2,DCLK1,C DC42EP3,NRIP1,NCAM1,ITGA1,CLSTN2, TCF12,KDM4B,TANC1,ITGA8,TCF4,PBX1 ,FAM171A1,PHACTR1,PIK3R3,SLC39A12 ,DISC1,FMN1,EYA1,GPR158,GABRB1,ND RG2,APBA2,ASAP1,FYN,ANK2,SLC1A2,C SMD3,GRIN2B,GRIA1,NEGR1,FGF12,S10 0B,TOX,PCDH15,ESR1,ARHGAP12,ABCB5 ,MEGF11,PDE4D,LRIG1,PRKACB,LAMA1, CDH11,BRINP1,NRXN1,NTRK3,WDPCP,AD CYAP1R1,EPHB1,LSAMP,GREB1L,ZDHHC1 7,ABCC9,CACNA1C,DNM3,BBS2,ASXL3,D PF3,FLT1,SCAPER,EXOC4,RORA,PTPRD, MYO9A,FOXN3,NTRK2,LOXL2,GRIK1,SOX 5,PRKG1,DSCAM,FTO,THSD7A,NCAM2,MA GI2,NELL1,AKAP6,SRGAP2B,CNTN1,DOC K10,OPCML,GRM5,ENPEP,CA10,LDB2,PR KD1,NRG3,NLGN1,PTPRG,JAM2,GRID2,L RP2,SEMA6D,SYNE1,FER,SNRK,RYR2,FB XL17,MAP2,PRLR,FAT3,MTPN,SOX6,SGC D,PCDH9,VCL,SEZ6L,VCAN,ATAT1,RAPG EF2,RAPGEF5,INSR,AKAP13,IMMP2L,AT XN1,GABRG2,NRXN3,PGM5,ASTN1,CPE,S EMA5A,CABLES1,ATP8A2,CALD1,SLC24A 3,ARHGAP24,CTNNA2,APC,CHN1,RELN,T RPS1,ROR1,KAZN,TNR,CRB1,VAV3,PRKC A,FMN2,XYLT1,ALPK2,CCDC88A,ARNT2, AFF3
GO:0030182	neuron differentiat ion	6.0011229392 0762e-17	ERBB4,APBB2,MACF1,CTNND2,RTN1,NRP 1,NFIA,FRY,MDGA2,ABL2,LRRC4C,MYEF 2,DCLK1,NCAM1,ITGA1,TCF12,TCF4,PB X1,PHACTR1,SLC39A12,DISC1,EYA1,GA BRB1,ASAP1,FYN,CSMD3,NEGR1,S100B, TOX,PCDH15,LAMA1,CDH11,BRINP1,NRX N1,NTRK3,WDPCP,EPHB1,ZDHHC17,DNM3 ,RORA,PTPRD,MYO9A,NTRK2,PRKG1,DSC AM,NCAM2,MAGI2,CNTN1,DOCK10,OPCML ,PRKD1,NLGN1,PTPRG,GRID2,LRP2,SEM A6D,SYNE1,MAP2,FAT3,MTPN,VCL,ATAT 1,RAPGEF2,NRXN3,SEMA5A,ATP8A2,CTN NA2,CHN1,RELN,ROR1,TNR,CRB1,CCDC8 8A
GO:0022008	neurogenesis	3.6199246028 61529e-16	ERBB4,APBB2,MACF1,CTNND2,RTN1,NRP 1,NFIA,FRY,MDGA2,ABL2,EML1,LRRC4C ,MYEF2,DCLK1,NCAM1,ITGA1,TCF12,TC F4,PBX1,PHACTR1,SLC39A12,DISC1,EY A1,GABRB1,ASAP1,FYN,CSMD3,NEGR1,S 100B,TOX,PCDH15,LAMA1,CDH11,BRINP 1,NRXN1,NTRK3,WDPCP,EPHB1,ZDHHC17 ,DNM3,RORA,PTPRD,MYO9A,NTRK2,SOX5 ,PRKG1,DSCAM,NCAM2,MAGI2,CNTN1,DO CK10,OPCML,GRM5,PRKD1,NRG3,NLGN1, PTPRG,GRID2,LRP2,SEMA6D,SYNE1,MAP 2,FAT3,MTPN,SOX6,VCL,VCAN,ATAT1,R

			APGEF2,NRXN3,ASTN1,SEMA5A,ATP8A2, CTNNA2,CHN1,RELN,ROR1,TNR,CRB1,CC DC88A
GO:0032502	developmental process	4.6703315022 33188e-16	*ERBB4,ZHX3,APBB2,ATRX,ADAMTS18,MA CF1,CTNND2,MITF,RTN1,NRP1,TEAD1,N FIA,FRY,CDH13,MDGA2,ABL2,UTRN,SLC 8A1,DACH1,EML1,SIAH3,LDLRAD4,STAR D13,MMP16,SLC40A1,LRRC4C,MYEF2,DC LK1,SLC9C1,CDC42EP3,NRIP1,NCAM1,I TGA1,CLSTN2,TCF12,KDM4B,TANC1,ITG A8,TCF4,PBX1,FAM171A1,PHACTR1,PIK 3R3,SLC39A12,DISC1,FMN1,EYA1,GPR1 58,GABRB1,NDRG2,APBA2,ASAP1,FYN,A NK2,SLC1A2,CSMD3,GRIN2B,PHC2,GRIA 1,NEGR1,FGF12,S100B,TOX,PCDH15,ES R1,ARHGAP12,ABCB5,MEGF11,PDE4D,LR IG1,PRKACB,LAMA1,CDH11,BRINP1,NRX N1,NTRK3,WDPCP,ADCYAP1R1,EPHB1,LS AMP,GREB1L,ZDHHC17,ABCC9,CACNA1C, DNM3,BBS2,ASXL3,DPF3,FLT1,SCAPER, EXOC4,RORA,PTPRD,MYO9A,FOXN3,NTRK 2,LOXL2,GRIK1,SOX5,PRKG1,DSCAM,FT O,THSD7A,NCAM2,MAGI2,NELL1,AKAP6, SRGAP2B,CNTN1,DOCK10,OPCML,GRM5,E NPEP,PLEKHB2,CA10,LDB2,PRKD1,NRG3 ,NLGN1,PTPRG,JAM2,GRID2,LRP2,SEMA 6D,SYNE1,FER,SNRK,RYR2,FBXL17,MAP 2,PRLR,FAT3,MED15,MTPN,SOX6,SGCD, PCDH9,VCL,SEZ6L,VCAN,ATAT1,RAPGEF 2,RAPGEF5,INSR,AKAP13,IMMP2L,ATXN 1,GABRG2,UNC13C,NRXN3,PGM5,ASTN1, CPE,SEMA5A,CABLES1,ATP8A2,CALD1,S LC24A3,ARHGAP24,CTNNA2,APC,CHN1,R ELN,TRPS1,ROR1,KAZN,TNR,CRB1,VAV3 ,PRKCA,FMN2,XYLT1,ALPK2,CCDC88A,A RNT2,AFF3*
GO:0007268	chemical synaptic transmission	5.4380632310 62327e-16	*LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4, GABRG1,DISC1,GPR158,APBA2,FYN,SLC 1A2,CADPS,DLGAP1,GRIN2B,GRIA1,FGF 12,DGKB,CACNG2,S100B,ERC2,FCHSD2, CDH11,NRXN1,EPHB1,GRID1,EXOC4,DLG 2,PTPRD,NTRK2,GRIK1,DGKI,GRM5,NRG 3,NLGN1,GRID2,SYNE1,PTPRA,GRIK3,C ACNB2,RAPGEF2,GABRG2,UNC13C,NRXN3 ,DLGAP2,NSG1,KCND2,GRIA4,RELN,TNR ,DTNA,ERC1*
GO:0098916	anterograde trans-synaptic signaling	5.4380632310 62327e-16	*LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4, GABRG1,DISC1,GPR158,APBA2,FYN,SLC 1A2,CADPS,DLGAP1,GRIN2B,GRIA1,FGF 12,DGKB,CACNG2,S100B,ERC2,FCHSD2, CDH11,NRXN1,EPHB1,GRID1,EXOC4,DLG 2,PTPRD,NTRK2,GRIK1,DGKI,GRM5,NRG 3,NLGN1,GRID2,SYNE1,PTPRA,GRIK3,C ACNB2,RAPGEF2,GABRG2,UNC13C,NRXN3 ,DLGAP2,NSG1,KCND2,GRIA4,RELN,TNR ,DTNA,ERC1*
GO:0099536	synaptic signaling	5.4880158930 95248e-16	*UTRN,LRRC4C,GRIK2,IGSF11,CLSTN2,G RIK4,GABRG1,DISC1,GPR158,APBA2,FY N,SLC1A2,CADPS,DLGAP1,GRIN2B,GRIA*

			1,FGF12,DGKB,CACNG2,S100B,ERC2,FC HSD2,CDH11,NRXN1,EPHB1,GRID1,EXOC 4,DLG2,PTPRD,NTRK2,GRIK1,DGKI,GRM 5,NRG3,NLGN1,GRID2,SYNE1,PTPRA,GR IK3,CACNB2,RAPGEF2,GABRG2,UNC13C, NRXN3,DLGAP2,NSG1,KCND2,GRIA4,REL N,TNR,DTNA,ERC1
GO:0099537	trans-synaptic signaling	7.6534618345 47519e-16	*LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4, GABRG1,DISC1,GPR158,APBA2,FYN,SLC 1A2,CADPS,DLGAP1,GRIN2B,GRIA1,FGF 12,DGKB,CACNG2,S100B,ERC2,FCHSD2, CDH11,NRXN1,EPHB1,GRID1,EXOC4,DLG 2,PTPRD,NTRK2,GRIK1,DGKI,GRM5,NRG 3,NLGN1,GRID2,SYNE1,PTPRA,GRIK3,C ACNB2,RAPGEF2,GABRG2,UNC13C,NRXN3 ,DLGAP2,NSG1,KCND2,GRIA4,RELN,TNR ,DTNA,ERC1*
GO:0032501	multicellular organismal process	1.8234828630 59553e-15	*ERBB4,KCNMA1,ZHX3,APBB2,ATRX,ADAM TS18,MACF1,CTNND2,MITF,RTN1,NRP1, TEAD1,NFIA,FRY,CDH13,MDGA2,ABL2,U TRN,SLC8A1,DACH1,EML1,SLC2A13,SIA H3,LDLRAD4,STARD13,MMP16,SLC40A1, LRRC4C,SLCO3A1,MYEF2,DCLK1,SLC9C1 ,HMCN1,GRIK2,IGSF11,NRIP1,NCAM1,I TGA1,CLSTN2,TCF12,KDM4B,TANC1,COR O2B,ITGA8,ZBTB20,ASB3,TCF4,PBX1,P HACTR1,PIK3R3,SLC39A12,DISC1,FMN1 ,ARHGAP42,EYA1,GPR158,GABRB1,NDRG 2,APBA2,ASAP1,FYN,ANK2,SLC1A2,CSM D3,GRIN2B,PHC2,GRIA1,NEGR1,FGF12, DGKB,CACNG2,S100B,TOX,PCDH15,ESR1 ,ABCB5,MEGF11,PDE4D,LRIG1,PRKACB, LAMA1,CDH11,DOCK4,BRINP1,NRXN1,NT RK3,WDPCP,ADCYAP1R1,EPHB1,LSAMP,G RID1,GREB1L,ZDHHC17,ABCC9,CACNA1C ,PRKAA2,DNM3,BBS2,DPF3,FLT1,SCAPE R,EXOC4,PPP1R12B,RORA,PTPRD,MYO9A ,FOXN3,NTRK2,LOXL2,GRIK1,SOX5,PRK G1,DSCAM,DGKI,FTO,THSD7A,NBEA,NCA M2,MAGI2,NELL1,AKAP6,SRGAP2B,CNTN 1,DOCK10,OPCML,GRM5,ENPEP,CA10,LD B2,PRKD1,NRG3,ATP8A1,NLGN1,PTPRG, OR9Q1,JAM2,GRID2,LRP2,SEMA6D,SYNE 1,FER,RYR2,FBXL17,MAP2,PRLR,FAT3, CACNB2,MED15,MTPN,MAPRE2,SOX6,SGC D,PCDH9,VCL,SEZ6L,VCAN,ATAT1,RAPG EF2,RAPGEF5,INSR,AKAP13,IMMP2L,AT XN1,GABRG2,NRXN3,ASTN1,CPE,KCND2, SEMA5A,CABLES1,ATP8A2,CALD1,SLC24 A3,LHFPL3,ARHGAP24,CTNNA2,APC,CHN 1,RELN,TRPS1,ROR1,SLC4A4,KAZN,TNR ,DTNA,CRB1,VAV3,PRKCA,KCNE4,FMN2, XYLT1,ALPK2,CCDC88A,ARNT2,AFF3*
GO:0048666	neuron development	2.4320485113 264353e-15	*APBB2,MACF1,CTNND2,NRP1,FRY,ABL2, LRRC4C,DCLK1,NCAM1,ITGA1,PBX1,PHA CTR1,SLC39A12,DISC1,GABRB1,ASAP1, FYN,CSMD3,NEGR1,S100B,TOX,PCDH15, LAMA1,CDH11,BRINP1,NRXN1,NTRK3,WD PCP,EPHB1,ZDHHC17,DNM3,PTPRD,MYO9*

			A,NTRK2,PRKG1,DSCAM,NCAM2,MAGI2,C NTN1,DOCK10,OPCML,PRKD1,NLGN1,PTP RG,GRID2,LRP2,SEMA6D,SYNE1,MAP2,F AT3,VCL,ATAT1,RAPGEF2,NRXN3,SEMA5 A,ATP8A2,CTNNA2,CHN1,RELN,ROR1,TN R,CRB1,CCDC88A
GO:0007267	cell-cell signaling	1.9640264386 329733e-14	MACF1,CTNND2,MITF,NRP1,UTRN,ANKRD 6,LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK 4,GABRG1,DISC1,GPR158,GABRB1,NDRG 2,APBA2,FYN,ANK2,SLC1A2,CADPS,DLG AP1,GRIN2B,GRIA1,FGF12,DGKB,CACNG 2,S100B,ERC2,FCHSD2,CDH11,NRXN1,R APGEF4,EPHB1,PRICKLE2,GRID1,CACNA 1C,PRKAA2,EXOC4,DLG2,PTPRD,NTRK2, GRIK1,DGKI,MAGI2,GRM5,ENPEP,PRKD1 ,NRG3,NLGN1,GRID2,SYNE1,RYR2,PTPR A,GRIK3,CACNB2,STXBP4,RBMS3,RAPGE F2,GABRG2,UNC13C,NRXN3,DLGAP2,NSG 1,CPE,KCND2,SEMA5A,GRIA4,APC,RELN ,ROR1,TNR,DTNA,CRB1,ERC1,ALPK2
GO:0009653	anatomical structure morphogenesi s	2.6764543230 726155e-14	ERBB4,APBB2,ATRX,MACF1,CTNND2,NRP 1,NFIA,FRY,CDH13,STARD13,MMP16,SL C40A1,LRRC4C,DCLK1,CDC42EP3,NCAM1 ,ITGA1,TANC1,ITGA8,PBX1,FAM171A1, PHACTR1,PIK3R3,SLC39A12,DISC1,FMN 1,EYA1,FYN,ANK2,S100B,PCDH15,ESR1 ,ARHGAP12,MEGF11,LRIG1,PRKACB,LAM A1,CDH11,NRXN1,WDPCP,EPHB1,GREB1L ,ZDHHC17,ABCC9,CACNA1C,DNM3,BBS2, ASXL3,FLT1,EXOC4,RORA,PTPRD,MYO9A ,FOXN3,NTRK2,LOXL2,SOX5,PRKG1,DSC AM,THSD7A,MAGI2,CNTN1,DOCK10,ENPE P,PRKD1,NRG3,NLGN1,JAM2,GRID2,LRP 2,SEMA6D,SYNE1,RYR2,MAP2,FAT3,MTP N,SOX6,SGCD,VCL,RAPGEF2,INSR,AKAP 13,NRXN3,PGM5,CPE,SEMA5A,ATP8A2,C ALD1,ARHGAP24,CTNNA2,APC,CHN1,REL N,TNR,CRB1,VAV3,PRKCA,ALPK2,AFF3
GO:0031175	neuron projection development	1.0235204144 000854e-13	APBB2,MACF1,CTNND2,NRP1,FRY,ABL2, LRRC4C,DCLK1,NCAM1,ITGA1,PHACTR1, SLC39A12,DISC1,ASAP1,FYN,CSMD3,NE GR1,S100B,TOX,PCDH15,LAMA1,CDH11, NRXN1,NTRK3,EPHB1,ZDHHC17,DNM3,PT PRD,MYO9A,NTRK2,PRKG1,DSCAM,NCAM2 ,MAGI2,CNTN1,DOCK10,PRKD1,NLGN1,P TPRG,GRID2,LRP2,SEMA6D,SYNE1,MAP2 ,FAT3,VCL,RAPGEF2,NRXN3,SEMA5A,AT P8A2,CTNNA2,CHN1,RELN,ROR1,TNR,CC DC88A
GO:0065008	regulation of biological quality	1.5712523839 621706e-13	SAMD4A,ERBB4,KCNMA1,ADAMTS18,MACF 1,NRP1,ABL2,SLC8A1,SIAH3,SLC9C1,C DC42EP3,GRIK2,IGSF11,ITGA1,CLSTN2 ,TANC1,CORO2B,GRIK4,GABRG1,FAM171 A1,DISC1,FMN1,ARHGAP42,GPR158,GAB RB1,ASAP1,FYN,ANK2,GRIN2B,GRIA1,N EGR1,FGF12,DGKB,CACNG2,S100B,ESR1 ,ABCB5,PDE4D,ERC2,PRKACB,FCHSD2,D OCK4,NRXN1,WDPCP,RAPGEF4,ADCYAP1R 1,EPHB1,CTTNBP2,GRID1,TNRC6B,ABCC

GO ID	Term	p-value	Genes
			9,GSG1L,CACNA1C,DNM3,BBS2,PTPRD,N TRK2,GRIK1,PRKG1,DSCAM,DGKI,FTO,N BEA,AKAP6,GRM5,ENPEP,PRKD1,ATP8A1 ,NLGN1,GRID2,SEMA6D,SYNE1,FER,RYR 2,MAP2,PRLR,GRIK3,CACNB2,STXBP4,M TPN,VCL,RAPGEF2,GABRG2,UNC13C,NRX N3,NSG1,CPE,KCND2,SEMA5A,ATP8A2,G RIA4,CTNNA2,GPC6,RELN,SLC4A4,TNR, VAV3,PRKCA,KCNE4,ERC1,AGO3
GO:0048513	animal organ development	1.8911502004 397216e-13	*ERBB4,ATRX,ADAMTS18,MITF,RTN1,NRP 1,TEAD1,NFIA,UTRN,SLC8A1,EML1,LDL RAD4,MMP16,SLC40A1,DCLK1,NRIP1,NC AM1,TCF12,KDM4B,ITGA8,PBX1,PHACTR 1,DISC1,FMN1,EYA1,GPR158,NDRG2,FY N,ANK2,SLC1A2,GRIN2B,GRIA1,FGF12, TOX,PCDH15,ESR1,ABCB5,MEGF11,LRIG 1,LAMA1,CDH11,BRINP1,NRXN1,NTRK3, WDPCP,EPHB1,GREB1L,ABCC9,CACNA1C, BBS2,ASXL3,DPF3,FLT1,SCAPER,EXOC4 ,RORA,FOXN3,NTRK2,LOXL2,SOX5,PRKG 1,DSCAM,FTO,MAGI2,NELL1,AKAP6,CNT N1,ENPEP,CA10,LDB2,NRG3,GRID2,LRP 2,SEMA6D,SYNE1,FER,RYR2,FBXL17,PR LR,FAT3,MTPN,SOX6,SGCD,PCDH9,ATAT 1,RAPGEF2,INSR,AKAP13,IMMP2L,ATXN 1,CPE,SEMA5A,ATP8A2,SLC24A3,CTNNA 2,APC,RELN,TRPS1,ROR1,KAZN,TNR,CR B1,XYLT1,ALPK2,ARNT2*
GO:0050804	modulation of chemical synaptic transmission	4.0539475756 367744e-13	*LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4, DISC1,GPR158,APBA2,FYN,GRIN2B,GRI A1,DGKB,CACNG2,S100B,ERC2,CDH11,N RXN1,EPHB1,GRID1,PTPRD,NTRK2,GRIK 1,DGKI,GRM5,NRG3,NLGN1,GRID2,SYNE 1,PTPRA,GRIK3,RAPGEF2,UNC13C,NRXN 3,NSG1,GRIA4,RELN,TNR,ERC1*
GO:0099177	regulation of trans-synaptic signaling	4.3358833917 50187e-13	*LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4, DISC1,GPR158,APBA2,FYN,GRIN2B,GRI A1,DGKB,CACNG2,S100B,ERC2,CDH11,N RXN1,EPHB1,GRID1,PTPRD,NTRK2,GRIK 1,DGKI,GRM5,NRG3,NLGN1,GRID2,SYNE 1,PTPRA,GRIK3,RAPGEF2,UNC13C,NRXN 3,NSG1,GRIA4,RELN,TNR,ERC1*
GO:0050789	regulation of biological process	4.3426714956 934525e-13	*SAMD4A,ERBB4,KCNMA1,PKNOX2,ZHX3,A PBB2,ATRX,ADAMTS18,MACF1,CTNND2,M ITF,RTN1,TRIM23,MED13L,NRP1,TEAD1 ,NFIA,FRY,CDH13,ABL2,UTRN,MAML2,S LC8A1,DACH1,SLC2A13,ANKRD6,RERG,S IAH3,CTIF,TBC1D5,FRMD5,LDLRAD4,ST ARD13,SLC40A1,LRRC4C,MALRD1,SLCO3 A1,PIK3C3,DCLK1,CDC42EP3,GRIK2,IG SF11,RGL1,NKAIN3,NRIP1,NCAM1,ITGA 1,CLSTN2,TCF12,CCNG2,KDM4B,GNG12, TANC1,CORO2B,ITGA8,VPS41,GRIK4,ZB TB20,ZNF407,ASB3,TCF4,GABRG1,PBX1 ,FAM171A1,PHACTR1,PIK3R3,SLC39A12 ,DISC1,FMN1,RALGPS1,ARHGAP42,PEAK 1,EYA1,GPR158,GABRB1,NDRG2,APBA2, ASAP1,ST8SIA1,FYN,ANK2,SLC1A2,CAD PS,CSMD3,DLGAP1,GRIN2B,PHC2,STK32*

			A,GRIA1,NEGR1,FGF12,DGKB,CACNG2,EBF1,S100B,TOX,ESR1,ARHGAP12,KLF12,PDE4D,ERC2,PRKACB,GNG2,FCHSD2,LAMA1,CDH11,SETBP1,DOCK4,MAST4,ITPR2,BRINP1,NRXN1,NTRK3,BCL2L13,WDPCP,MAGI1,RAPGEF4,CNKSR2,ADCYAP1R1,EPHB1,PRICKLE2,DPP6,CTTNBP2,GRID1,CREB5,TNRC6B,ZDHHC17,ABCC9,GSG1L,DCDC1,CACNA1C,PRKAA2,DNM3,BBS2,ASXL3,DPF3,FLT1,EDIL3,EXOC4,DLG2,PPP1R12B,SACS,RORA,PTPRD,CDC14B,MYO9A,FOXN3,NTRK2,LOXL2,GRIK1,SOX5,PRKG1,DSCAM,DGKI,FTO,NBEA,MXI1,TTC28,MAGI2,NELL1,AKAP6,IQCJ-SCHIP1,RNF152,CNTN1,DOCK10,GRM5,ENPEP,PLEKHB2,LDB2,PRKD1,NRG3,ATP8A1,NLGN1,PTPRG,OR9Q1,JAM2,GRID2,LRP2,SEMA6D,SYNE1,RALGPS2,FER,SNRK,RYR2,FBXL17,MAP2,SUSD4,PRLR,PTPRA,FAT3,GRIK3,CACNB2,STXBP4,MED15,MTPN,MAPRE2,SOX6,SGCD,PDE4DIP,RIC8B,MPDZ,VCL,SEZ6L,VCAN,ATAT1,RBMS3,RAPGEF2,ZMYND11,RAPGEF5,INSR,RGS6,SRGAP3,AKAP13,ATXN1,GABRG2,UNC13C,NRXN3,RALGAPA1,DLGAP2,NSG1,CLIP1,CPE,KCND2,SEMA5A,CABLES1,ATP8A2,SLC24A3,ARHGAP24,GRIA4,CNIH3,DOCK3,CTNNA2,APC,GPC6,CHN1,RELN,VPS13C,TRPS1,ROR1,SLC4A4,TNR,DTNA,CRB1,VAV3,NPAS3,PRKCA,KMT2C,INPP5A,ZNF678,KCNE4,FMN2,ERC1,AGO3,ALPK2,CCDC88A,ARNT2,AFF3
GO:0120036	plasma membrane bounded cell projection organization	1.938829867636505e-12	APBB2,MACF1,CTNND2,NRP1,FRY,CDH13,ABL2,LRRC4C,DCLK1,CDC42EP3,NCAM1,ITGA1,TANC1,PHACTR1,SLC39A12,DISC1,ASAP1,FYN,CSMD3,GRIN2B,NEGR1,S100B,TOX,PCDH15,LAMA1,CDH11,NRXN1,NTRK3,WDPCP,EPHB1,ZDHHC17,DNM3,BBS2,PTPRD,CDC14B,MYO9A,NTRK2,PRKG1,DSCAM,NCAM2,MAGI2,CNTN1,DOCK10,PRKD1,NLGN1,PTPRG,GRID2,LRP2,SEMA6D,SYNE1,FER,MAP2,FAT3,VCL,ATAT1,RAPGEF2,INSR,NRXN3,SEMA5A,ATP8A2,ARHGAP24,CTNNA2,APC,CHN1,RELN,ROR1,TNR,VAV3,CCDC88A
GO:0030030	cell projection organization	2.170354676121407e-12	APBB2,MACF1,CTNND2,NRP1,FRY,CDH13,ABL2,LRRC4C,DCLK1,CDC42EP3,NCAM1,ITGA1,TANC1,ITGA8,PHACTR1,SLC39A12,DISC1,ASAP1,FYN,CSMD3,GRIN2B,NEGR1,S100B,TOX,PCDH15,LAMA1,CDH11,NRXN1,NTRK3,WDPCP,EPHB1,ZDHHC17,DNM3,BBS2,PTPRD,CDC14B,MYO9A,NTRK2,PRKG1,DSCAM,NCAM2,MAGI2,CNTN1,DOCK10,PRKD1,NLGN1,PTPRG,GRID2,LRP2,SEMA6D,SYNE1,FER,MAP2,FAT3,VCL,ATAT1,RAPGEF2,INSR,NRXN3,SEMA5A,ATP8A2,ARHGAP24,CTNNA2,APC,CHN1,RELN,ROR1,TNR,VAV3,CCDC88A
GO:0007155	cell	3.7359122155	LPP,ADAMTS18,MACF1,CTNND2,NRP1,CD

	adhesion	50562e-12	H13,ABL2,UTRN,FRMD5,PCDH7,LRRC4C, CADM2,HMCN1,IGSF11,NCAM1,ITGA1,CL STN2,CORO2B,ITGA8,DISC1,FMN1,PEAK 1,FYN,NEGR1,S100B,PCDH15,MEGF11,L AMA1,CDH11,NRXN1,WDPCP,MAGI1,EPHB 1,LSAMP,CNTN3,EDIL3,DLG2,PTPRD,TL N2,PRKG1,DSCAM,NCAM2,CNTN1,OPCML, NLGN1,JAM2,GRID2,FER,PRLR,PTPRA,F AT3,PCDH9,VCL,VCAN,CNTNAP5,NRXN3, PGM5,ASTN1,SEMA5A,CTNNA2,APC,PARD 3B,RELN,TNR,CRB1,VAV3,PRKCA
GO:0065007	biological regulation	3.9387956301 39636e-12	SAMD4A,ERBB4,KCNMA1,PKNOX2,ZHX3,A PBB2,ATRX,ADAMTS18,MACF1,CTNND2,M ITF,RTN1,TRIM23,MED13L,NRP1,TEAD1 ,NFIA,FRY,CDH13,ABL2,UTRN,MAML2,S LC8A1,DACH1,SLC2A13,ANKRD6,RERG,S IAH3,CTIF,TBC1D5,FRMD5,LDLRAD4,ST ARD13,SLC40A1,LRRC4C,MALRD1,SLCO3 A1,PIK3C3,DCLK1,SLC9C1,CDC42EP3,G RIK2,IGSF11,RGL1,NKAIN3,NRIP1,NCA M1,ITGA1,CLSTN2,TCF12,CCNG2,KDM4B ,GNG12,TANC1,CORO2B,EVI5,ITGA8,VP S41,GRIK4,ZBTB20,ZNF407,ASB3,TCF4 ,GABRG1,PBX1,FAM171A1,PHACTR1,PIK 3R3,SLC39A12,DISC1,FMN1,RALGPS1,A RHGAP42,PEAK1,EYA1,GPR158,GABRB1, NDRG2,APBA2,ASAP1,ST8SIA1,FYN,ANK 2,SLC1A2,CADPS,CSMD3,DLGAP1,GRIN2 B,PHC2,STK32A,GRIA1,NEGR1,FGF12,D GKB,CACNG2,EBF1,S100B,TOX,ESR1,AR HGAP12,KLF12,ABCB5,PDE4D,ERC2,PRK ACB,GNG2,FCHSD2,LAMA1,CDH11,SETBP 1,DOCK4,MAST4,ITPR2,BRINP1,NRXN1, NTRK3,BCL2L13,WDPCP,MAGI1,RAPGEF4 ,CNKSR2,ADCYAP1R1,EPHB1,PRICKLE2, DPP6,CTTNBP2,GRID1,CREB5,TNRC6B,Z DHHC17,ABCC9,GSG1L,DCDC1,CACNA1C, PRKAA2,DNM3,BBS2,ASXL3,DPF3,FLT1, EDIL3,EXOC4,DLG2,PPP1R12B,SACS,RO RA,PTPRD,CDC14B,MYO9A,FOXN3,NTRK2 ,LOXL2,GRIK1,SOX5,PRKG1,DSCAM,DGK I,FTO,NBEA,MXI1,TTC28,MAGI2,NELL1 ,AKAP6,IQCJ-SCHIP1,RNF152,CNTN1,DOCK10,GRM5,E NPEP,PLEKHB2,LDB2,PRKD1,NRG3,ATP8 A1,NLGN1,PTPRG,OR9Q1,JAM2,GRID2,L RP2,SEMA6D,SYNE1,RALGPS2,FER,SNRK ,RYR2,FBXL17,MAP2,SUSD4,PRLR,PTPR A,FAT3,GRIK3,CACNB2,STXBP4,MED15, MTPN,MAPRE2,SOX6,SGCD,PDE4DIP,RIC 8B,MPDZ,VCL,SEZ6L,VCAN,ATAT1,RBMS 3,RAPGEF2,ZMYND11,RAPGEF5,INSR,RG S6,SRGAP3,AKAP13,ATXN1,GABRG2,UNC 13C,NRXN3,RALGAPA1,DLGAP2,NSG1,CL IP1,CPE,KCND2,SEMA5A,CABLES1,ATP8 A2,SLC24A3,ARHGAP24,GRIA4,CNIH3,D OCK3,CTNNA2,APC,GPC6,CHN1,RELN,VP S13C,TRPS1,ROR1,SLC4A4,TNR,DTNA,C RB1,VAV3,NPAS3,PRKCA,KMT2C,INPP5A

			,*ZNF678,KCNE4,FMN2,ERC1,AGO3,ALPK2,CCDC88A,ARNT2,AFF3*
GO:0007154	cell communication	4.28247976429831e-12	*ERBB4,APBB2,ATRX,ADAMTS18,MACF1,CTNND2,MITF,NRP1,TEAD1,NFIA,CDH13,ABL2,UTRN,MAML2,SLC8A1,ANKRD6,RERG,SNTG1,LDLRAD4,STARD13,LRRC4C,PIK3C3,DCLK1,CDC42EP3,GRIK2,IGSF11,RGL1,NCAM1,ITGA1,CLSTN2,GNG12,ITGA8,VPS41,GRIK4,ASB3,GABRG1,PIK3R3,SLC39A12,DISC1,RALGPS1,ARHGAP42,EYA1,GPR158,GABRB1,NDRG2,APBA2,FYN,ANK2,SLC1A2,CADPS,DLGAP1,GRIN2B,STK32A,GRIA1,FGF12,DGKB,CACNG2,S100B,ESR1,ARHGAP12,PDE4D,ERC2,PRKACB,GNG2,FCHSD2,LAMA1,CDH11,DOCK4,MAST4,ITPR2,NRXN1,NTRK3,WDPCP,MAGI1,RAPGEF4,CNKSR2,ADCYAP1R1,EPHB1,PRICKLE2,GRID1,ZDHHC17,DCDC1,CACNA1C,PRKAA2,BBS2,FLT1,EXOC4,DLG2,PPP1R12B,RORA,PTPRD,CDC14B,MYO9A,FOXN3,NTRK2,GRIK1,PRKG1,DSCAM,DGKI,MAGI2,AKAP6,IQCJ-SCHIP1,RNF152,CNTN1,DOCK10,GRM5,ENPEP,PRKD1,NRG3,NLGN1,PTPRG,OR9Q1,GRID2,LRP2,SEMA6D,SYNE1,RALGPS2,FER,SNRK,RYR2,FBXL17,PRLR,PTPRA,GRIK3,CACNB2,STXBP4,MAPRE2,SGCD,RIC8B,SEZ6L,ATAT1,RBMS3,RAPGEF2,ZMYND11,RAPGEF5,INSR,RGS6,SRGAP3,AKAP13,GABRG2,UNC13C,NRXN3,RALGAPA1,DLGAP2,NSG1,CPE,KCND2,SEMA5A,ARHGAP24,GRIA4,CNIH3,DOCK3,APC,GPC6,CHN1,RELN,ROR1,TNR,DTNA,CRB1,VAV3,PRKCA,INPP5A,FMN2,ERC1,AGO3,ALPK2,CCDC88A*
GO:0023052	signaling	6.48083571966655e-12	*ERBB4,APBB2,ATRX,ADAMTS18,MACF1,CTNND2,MITF,NRP1,TEAD1,NFIA,CDH13,ABL2,UTRN,MAML2,SLC8A1,ANKRD6,RERG,LDLRAD4,STARD13,LRRC4C,PIK3C3,DCLK1,CDC42EP3,GRIK2,IGSF11,RGL1,NCAM1,ITGA1,CLSTN2,GNG12,ITGA8,GRIK4,ASB3,GABRG1,PIK3R3,SLC39A12,DISC1,RALGPS1,ARHGAP42,EYA1,GPR158,GABRB1,NDRG2,APBA2,FYN,ANK2,SLC1A2,CADPS,DLGAP1,GRIN2B,STK32A,GRIA1,FGF12,DGKB,CACNG2,S100B,ESR1,ARHGAP12,PDE4D,ERC2,PRKACB,GNG2,FCHSD2,LAMA1,CDH11,DOCK4,MAST4,ITPR2,NRXN1,NTRK3,WDPCP,MAGI1,RAPGEF4,CNKSR2,ADCYAP1R1,EPHB1,PRICKLE2,GRID1,ZDHHC17,DCDC1,CACNA1C,PRKAA2,BBS2,FLT1,EXOC4,DLG2,PPP1R12B,RORA,PTPRD,CDC14B,MYO9A,FOXN3,NTRK2,GRIK1,PRKG1,DSCAM,DGKI,MAGI2,AKAP6,IQCJ-SCHIP1,RNF152,CNTN1,DOCK10,GRM5,ENPEP,PRKD1,NRG3,NLGN1,PTPRG,OR9Q1,GRID2,LRP2,SEMA6D,SYNE1,RALGPS2,FER,SNRK,RYR2,FBXL17,PRLR,PTPRA,G*

			RIK3,CACNB2,STXBP4,MAPRE2,SGCD,RIC8B,SEZ6L,ATAT1,RBMS3,RAPGEF2,ZMYND11,RAPGEF5,INSR,RGS6,SRGAP3,AKAP13,GABRG2,UNC13C,NRXN3,RALGAPA1,DLGAP2,NSG1,CPE,KCND2,SEMA5A,ARHGAP24,GRIA4,CNIH3,DOCK3,APC,GPC6,CHN1,RELN,ROR1,TNR,DTNA,CRB1,VAV3,PRKCA,INPP5A,FMN2,ERC1,AGO3,ALPK2,CCDC88A
GO:0010975	regulation of neuron projection development	1.0570619688874916e-11	MACF1,NRP1,ABL2,LRRC4C,SLC39A12,DISC1,FYN,CSMD3,NEGR1,TOX,NRXN1,NTRK3,DNM3,PTPRD,NTRK2,DSCAM,MAGI2,CNTN1,PRKD1,NLGN1,PTPRG,GRID2,SEMA6D,SYNE1,MAP2,FAT3,RAPGEF2,SEMA5A,ATP8A2,CTNNA2,CHN1,RELN,ROR1,TNR,CCDC88A
GO:0042391	regulation of membrane potential	1.2783855167420576e-11	KCNMA1,SLC8A1,GRIK2,IGSF11,GRIK4,GABRG1,GABRB1,ANK2,GRIN2B,GRIA1,FGF12,CACNG2,ABCB5,NRXN1,GRID1,ABCC9,CACNA1C,NTRK2,GRIK1,DGKI,AKAP6,GRM5,NLGN1,GRID2,SYNE1,RYR2,GRIK3,CACNB2,GABRG2,KCND2,GRIA4,RELN,SLC4A4,KCNE4
GO:0035556	intracellular signal transduction	1.3615603270895394e-11	ERBB4,APBB2,ATRX,NRP1,TEAD1,CDH13,ABL2,SLC8A1,ANKRD6,RERG,LDLRAD4,STARD13,PIK3C3,DCLK1,CDC42EP3,GRIK2,RGL1,ITGA1,ASB3,PIK3R3,DISC1,RALGPS1,ARHGAP42,NDRG2,FYN,ANK2,GRIN2B,STK32A,FGF12,DGKB,S100B,ESR1,ARHGAP12,PDE4D,PRKACB,DOCK4,MAST4,NRXN1,NTRK3,RAPGEF4,CNKSR2,ADCYAP1R1,EPHB1,ZDHHC17,DCDC1,CACNA1C,PRKAA2,FLT1,RORA,CDC14B,MYO9A,FOXN3,NTRK2,PRKG1,DGKI,MAGI2,AKAP6,IQCJ-SCHIP1,RNF152,DOCK10,GRM5,PRKD1,NRG3,NLGN1,LRP2,RALGPS2,FER,SNRK,RYR2,MAPRE2,SGCD,SEZ6L,RAPGEF2,ZMYND11,RAPGEF5,INSR,RGS6,SRGAP3,AKAP13,RALGAPA1,SEMA5A,ARHGAP24,DOCK3,APC,CHN1,RELN,ROR1,VAV3,PRKCA,FMN2,ERC1,AGO3,CCDC88A
GO:0031344	regulation of cell projection organization	1.5839465409103994e-11	MACF1,NRP1,ABL2,LRRC4C,CDC42EP3,SLC39A12,DISC1,FYN,CSMD3,GRIN2B,NEGR1,TOX,NRXN1,NTRK3,WDPCP,DNM3,PTPRD,MYO9A,NTRK2,DSCAM,MAGI2,CNTN1,PRKD1,NLGN1,PTPRG,GRID2,SEMA6D,SYNE1,FER,MAP2,FAT3,RAPGEF2,SEMA5A,ATP8A2,ARHGAP24,CTNNA2,APC,CHN1,RELN,ROR1,TNR,CCDC88A
GO:0120035	regulation of plasma membrane bounded cell projection organization	3.5777925462243896e-11	MACF1,NRP1,ABL2,LRRC4C,CDC42EP3,SLC39A12,DISC1,FYN,CSMD3,GRIN2B,NEGR1,TOX,NRXN1,NTRK3,WDPCP,DNM3,PTPRD,NTRK2,DSCAM,MAGI2,CNTN1,PRKD1,NLGN1,PTPRG,GRID2,SEMA6D,SYNE1,FER,MAP2,FAT3,RAPGEF2,SEMA5A,ATP8A2,ARHGAP24,CTNNA2,APC,CHN1,RELN,ROR1,TNR,CCDC88A
GO:0034329	cell	3.7075619838	ERBB4,MACF1,CTNND2,NRP1,CDH13,CLS

	junction assembly	87765e-11	*TN2,CORO2B,FMN1,PEAK1,ANK2,GRIA1, NEGR1,CDH11,NRXN1,WDPCP,EPHB1,DNM 3,PTPRD,TLN2,MYO9A,NTRK2,DSCAM,NR G3,NLGN1,GRID2,FER,PTPRA,MPDZ,VCL ,RAPGEF2,GABRG2,NRXN3,APC,PRKCA*
GO:0010646	regulation of cell communicatio n	1.3224056399 207177e-10	*ERBB4,MACF1,CTNND2,NRP1,CDH13,ABL 2,SLC8A1,ANKRD6,LDLRAD4,STARD13,L RRC4C,GRIK2,IGSF11,NCAM1,ITGA1,CL STN2,ITGA8,GRIK4,DISC1,RALGPS1,AR HGAP42,EYA1,GPR158,NDRG2,APBA2,FY N,ANK2,GRIN2B,GRIA1,FGF12,DGKB,CA CNG2,S100B,ESR1,ARHGAP12,PDE4D,ER C2,PRKACB,LAMA1,CDH11,NRXN1,NTRK3 ,RAPGEF4,CNKSR2,ADCYAP1R1,EPHB1,G RID1,ZDHHC17,PRKAA2,FLT1,RORA,PTP RD,MYO9A,NTRK2,GRIK1,DGKI,MAGI2,A KAP6,IQCJ- SCHIP1,RNF152,GRM5,PRKD1,NRG3,NLG N1,GRID2,LRP2,SYNE1,FER,RYR2,FBXL 17,PRLR,PTPRA,GRIK3,STXBP4,MAPRE2 ,RIC8B,SEZ6L,ATAT1,RBMS3,RAPGEF2, ZMYND11,INSR,RGS6,SRGAP3,AKAP13,U NC13C,NRXN3,RALGAPA1,NSG1,SEMA5A, ARHGAP24,GRIA4,CNIH3,DOCK3,APC,GP C6,CHN1,RELN,ROR1,TNR,VAV3,PRKCA, INPP5A,ERC1,AGO3,ALPK2,CCDC88A*
GO:0035249	synaptic transmission , glutamatergi c	1.9022068427 490215e-10	*GRIK2,GRIK4,DISC1,GRIN2B,GRIA1,CA CNG2,NRXN1,GRID1,GRIK1,DGKI,GRM5, NLGN1,GRID2,GRIK3,UNC13C,GRIA4,RE LN,TNR*
GO:0048667	cell morphogenesi s involved in neuron differentiat ion	2.4311643295 03362e-10	*APBB2,MACF1,CTNND2,NRP1,LRRC4C,DC LK1,NCAM1,PHACTR1,DISC1,FYN,S100B ,PCDH15,CDH11,NRXN1,WDPCP,EPHB1,Z DHHC17,DNM3,PTPRD,NTRK2,PRKG1,DSC AM,CNTN1,DOCK10,NLGN1,SEMA6D,SYNE 1,MAP2,FAT3,VCL,RAPGEF2,NRXN3,SEM A5A,ATP8A2,CTNNA2,CHN1,RELN,TNR*
GO:0060078	regulation of postsynaptic membrane potential	2.8054833154 741963e-10	*GRIK2,IGSF11,GRIK4,GABRG1,GABRB1, GRIN2B,GRIA1,NRXN1,GRID1,GRIK1,DG KI,GRM5,NLGN1,GRID2,SYNE1,GRIK3,G ABRG2,KCND2,GRIA4,RELN*
GO:0007420	brain development	4.4364062595 224383e-10	*ERBB4,ATRX,RTN1,NRP1,EML1,DCLK1,K DM4B,PBX1,PHACTR1,DISC1,GPR158,ND RG2,FYN,SLC1A2,GRIN2B,GRIA1,TOX,B RINP1,NRXN1,EPHB1,BBS2,RORA,NTRK2 ,PRKG1,CNTN1,CA10,NRG3,GRID2,LRP2 ,SEMA6D,MTPN,SOX6,PCDH9,ATAT1,RAP GEF2,IMMP2L,ATXN1,SEMA5A,CTNNA2,R ELN,TNR,ARNT2*
GO:0032989	cellular anatomical entity morphogenesi s	8.9012243880 20229e-10	*APBB2,MACF1,CTNND2,NRP1,LRRC4C,DC LK1,NCAM1,ITGA1,PHACTR1,SLC39A12, DISC1,FYN,ANK2,S100B,CDH11,NRXN1, EPHB1,ZDHHC17,DNM3,PTPRD,MYO9A,NT RK2,PRKG1,DSCAM,CNTN1,DOCK10,PRKD 1,NLGN1,LRP2,SEMA6D,SYNE1,MAP2,VC L,RAPGEF2,AKAP13,NRXN3,PGM5,SEMA5*

			A,ATP8A2,CTNNA2,CHN1,RELN,TNR
GO:0048812	neuron projection morphogenesis	9.2819349191 24884e-10	APBB2,MACF1,CTNND2,NRP1,LRRC4C,DC LK1,NCAM1,ITGA1,PHACTR1,SLC39A12, DISC1,FYN,S100B,CDH11,NRXN1,EPHB1 ,ZDHHC17,DNM3,PTPRD,MYO9A,NTRK2,P RKG1,DSCAM,CNTN1,DOCK10,NLGN1,LRP 2,SEMA6D,SYNE1,MAP2,VCL,RAPGEF2,N RXN3,SEMA5A,ATP8A2,CTNNA2,CHN1,RE LN,TNR
GO:0007417	central nervous system development	1.0590359417 733588e-9	ERBB4,ATRX,RTN1,NRP1,MDGA2,EML1,D CLK1,KDM4B,PBX1,PHACTR1,DISC1,GPR 158,GABRB1,NDRG2,FYN,SLC1A2,GRIN2 B,GRIA1,S100B,TOX,CDH11,BRINP1,NR XN1,EPHB1,BBS2,RORA,NTRK2,GRIK1,P RKG1,CNTN1,CA10,NRG3,GRID2,LRP2,S EMA6D,MAP2,MTPN,SOX6,PCDH9,VCAN,A TAT1,RAPGEF2,IMMP2L,ATXN1,SEMA5A, CTNNA2,RELN,ROR1,TNR,ARNT2
GO:0050794	regulation of cellular process	1.6951900595 657904e-9	SAMD4A,ERBB4,KCNMA1,PKNOX2,ZHX3,A PBB2,ATRX,ADAMTS18,MACF1,CTNND2,M ITF,TRIM23,MED13L,NRP1,TEAD1,NFIA ,CDH13,ABL2,UTRN,MAML2,SLC8A1,DAC H1,ANKRD6,RERG,SIAH3,CTIF,TBC1D5, FRMD5,LDLRAD4,STARD13,SLC40A1,LRR C4C,MALRD1,SLCO3A1,PIK3C3,DCLK1,C DC42EP3,GRIK2,IGSF11,RGL1,NRIP1,N CAM1,ITGA1,CLSTN2,TCF12,CCNG2,KDM 4B,GNG12,TANC1,CORO2B,ITGA8,VPS41 ,GRIK4,ZBTB20,ZNF407,ASB3,TCF4,PB X1,PHACTR1,PIK3R3,SLC39A12,DISC1, FMN1,RALGPS1,ARHGAP42,PEAK1,EYA1, GPR158,GABRB1,NDRG2,APBA2,ASAP1,S T8SIA1,FYN,ANK2,SLC1A2,CADPS,CSMD 3,GRIN2B,PHC2,STK32A,GRIA1,NEGR1, FGF12,DGKB,CACNG2,EBF1,S100B,TOX, ESR1,ARHGAP12,KLF12,PDE4D,ERC2,PR KACB,GNG2,FCHSD2,LAMA1,CDH11,SETB P1,DOCK4,MAST4,ITPR2,BRINP1,NRXN1 ,NTRK3,BCL2L13,WDPCP,MAGI1,RAPGEF 4,CNKSR2,ADCYAP1R1,EPHB1,PRICKLE2 ,DPP6,CTTNBP2,GRID1,CREB5,TNRC6B, ZDHHC17,GSG1L,DCDC1,CACNA1C,PRKAA 2,DNM3,BBS2,ASXL3,DPF3,FLT1,EDIL3 ,EXOC4,PPP1R12B,SACS,RORA,PTPRD,C DC14B,MYO9A,FOXN3,NTRK2,LOXL2,GRI K1,SOX5,PRKG1,DSCAM,DGKI,FTO,NBEA ,MXI1,TTC28,MAGI2,NELL1,AKAP6,IQC J- SCHIP1,RNF152,CNTN1,DOCK10,GRM5,P LEKHB2,LDB2,PRKD1,NRG3,ATP8A1,NLG N1,PTPRG,OR9Q1,JAM2,GRID2,LRP2,SE MA6D,SYNE1,RALGPS2,FER,SNRK,RYR2, FBXL17,MAP2,PRLR,PTPRA,FAT3,GRIK3 ,CACNB2,STXBP4,MED15,MTPN,MAPRE2, SOX6,SGCD,PDE4DIP,RIC8B,MPDZ,VCL, SEZ6L,VCAN,ATAT1,RBMS3,RAPGEF2,ZM YND11,RAPGEF5,INSR,RGS6,SRGAP3,AK AP13,ATXN1,UNC13C,NRXN3,RALGAPA1, NSG1,CLIP1,CPE,SEMA5A,CABLES1,ATP

			8A2,SLC24A3,ARHGAP24,GRIA4,CNIH3, DOCK3,CTNNA2,APC,GPC6,CHN1,RELN,V PS13C,TRPS1,ROR1,SLC4A4,TNR,DTNA, VAV3,NPAS3,PRKCA,KMT2C,INPP5A,ZNF 678,FMN2,ERC1,AGO3,ALPK2,CCDC88A, ARNT2,AFF3
GO:0120039	plasma membrane bounded cell projection morphogenesis	1.9703533990 876688e-9	*APBB2,MACF1,CTNND2,NRP1,LRRC4C,DC LK1,NCAM1,ITGA1,PHACTR1,SLC39A12, DISC1,FYN,S100B,CDH11,NRXN1,EPHB1 ,ZDHHC17,DNM3,PTPRD,MYO9A,NTRK2,P RKG1,DSCAM,CNTN1,DOCK10,NLGN1,LRP 2,SEMA6D,SYNE1,MAP2,VCL,RAPGEF2,N RXN3,SEMA5A,ATP8A2,CTNNA2,CHN1,RE LN,TNR*
GO:0048858	cell projection morphogenesis	2.4806987769 238918e-9	*APBB2,MACF1,CTNND2,NRP1,LRRC4C,DC LK1,NCAM1,ITGA1,PHACTR1,SLC39A12, DISC1,FYN,S100B,CDH11,NRXN1,EPHB1 ,ZDHHC17,DNM3,PTPRD,MYO9A,NTRK2,P RKG1,DSCAM,CNTN1,DOCK10,NLGN1,LRP 2,SEMA6D,SYNE1,MAP2,VCL,RAPGEF2,N RXN3,SEMA5A,ATP8A2,CTNNA2,CHN1,RE LN,TNR*
GO:0000902	cell morphogenesis	2.5073006938 521696e-9	*APBB2,MACF1,CTNND2,NRP1,NFIA,FRY, CDH13,LRRC4C,DCLK1,CDC42EP3,NCAM1 ,ITGA1,FAM171A1,PHACTR1,SLC39A12, DISC1,FYN,S100B,PCDH15,CDH11,NRXN 1,WDPCP,EPHB1,ZDHHC17,DNM3,PTPRD, MYO9A,NTRK2,PRKG1,DSCAM,CNTN1,DOC K10,NLGN1,LRP2,SEMA6D,SYNE1,MAP2, FAT3,VCL,RAPGEF2,NRXN3,SEMA5A,ATP 8A2,CTNNA2,CHN1,RELN,TNR,CRB1*
GO:0060322	head development	4.0248310489 60218e-9	*ERBB4,ATRX,RTN1,NRP1,EML1,DCLK1,K DM4B,PBX1,PHACTR1,DISC1,GPR158,ND RG2,FYN,SLC1A2,GRIN2B,GRIA1,TOX,B RINP1,NRXN1,EPHB1,BBS2,RORA,NTRK2 ,PRKG1,CNTN1,CA10,NRG3,GRID2,LRP2 ,SEMA6D,MTPN,SOX6,PCDH9,ATAT1,RAP GEF2,IMMP2L,ATXN1,SEMA5A,CTNNA2,R ELN,TNR,ARNT2*
GO:0023051	regulation of signaling	4.9907096749 57525e-9	*ERBB4,MACF1,CTNND2,NRP1,CDH13,ABL 2,ANKRD6,LDLRAD4,STARD13,LRRC4C,G RIK2,IGSF11,NCAM1,ITGA1,CLSTN2,IT GA8,GRIK4,DISC1,RALGPS1,ARHGAP42, EYA1,GPR158,NDRG2,APBA2,FYN,GRIN2 B,GRIA1,DGKB,CACNG2,S100B,ESR1,AR HGAP12,PDE4D,ERC2,PRKACB,LAMA1,CD H11,NRXN1,NTRK3,RAPGEF4,CNKSR2,AD CYAP1R1,EPHB1,GRID1,ZDHHC17,PRKAA 2,FLT1,RORA,PTPRD,MYO9A,NTRK2,GRI K1,DGKI,MAGI2,AKAP6,IQCJ- SCHIP1,RNF152,GRM5,PRKD1,NRG3,NLG N1,GRID2,LRP2,SYNE1,FER,FBXL17,PR LR,PTPRA,GRIK3,STXBP4,MAPRE2,RIC8 B,SEZ6L,ATAT1,RBMS3,RAPGEF2,ZMYND 11,INSR,RGS6,SRGAP3,AKAP13,UNC13C ,NRXN3,RALGAPA1,NSG1,SEMA5A,ARHGA P24,GRIA4,CNIH3,DOCK3,APC,GPC6,CH N1,RELN,ROR1,TNR,VAV3,PRKCA,INPP5 A,ERC1,AGO3,ALPK2,CCDC88A*

GO:0003008	system process	6.9199754382 53169e-9	KCNMA1,APBB2,UTRN,SLC8A1,SLC2A13, SLCO3A1,HMCN1,GRIK2,IGSF11,ITGA1, CLSTN2,TANC1,CORO2B,ITGA8,ASB3,DI SC1,ARHGAP42,EYA1,GPR158,FYN,ANK2 ,SLC1A2,GRIN2B,GRIA1,FGF12,CACNG2 ,S100B,PCDH15,PDE4D,LRIG1,PRKACB, DOCK4,BRINP1,NRXN1,EPHB1,ABCC9,CA CNA1C,BBS2,PPP1R12B,MYO9A,NTRK2,P RKG1,DGKI,FTO,AKAP6,GRM5,ENPEP,PR KD1,ATP8A1,NLGN1,OR9Q1,JAM2,GRID2 ,LRP2,SYNE1,RYR2,CACNB2,MTPN,SGCD ,INSR,AKAP13,IMMP2L,ATXN1,NRXN3,K CND2,ATP8A2,CALD1,SLC24A3,LHFPL3, CTNNA2,RELN,ROR1,SLC4A4,TNR,DTNA, CRB1,PRKCA,KCNE4
GO:0051128	regulation of cellular component organization	1.3162343004 460935e-8	ATRX,MACF1,NRP1,TEAD1,CDH13,ABL2, RERG,TBC1D5,LRRC4C,CDC42EP3,CLSTN 2,TANC1,CORO2B,VPS41,SLC39A12,DIS C1,FMN1,PEAK1,GPR158,ASAP1,FYN,CS MD3,GRIN2B,NEGR1,DGKB,TOX,ERC2,FC HSD2,LAMA1,NRXN1,NTRK3,WDPCP,EPHB 1,CTTNBP2,GRID1,GSG1L,PRKAA2,DNM3 ,DPF3,SACS,PTPRD,MYO9A,NTRK2,DSCA M,MAGI2,AKAP6,IQCJ- SCHIP1,CNTN1,PRKD1,NRG3,ATP8A1,NL GN1,PTPRG,GRID2,SEMA6D,SYNE1,FER, MAP2,PTPRA,FAT3,MTPN,MAPRE2,PDE4D IP,MPDZ,VCL,ATAT1,RAPGEF2,INSR,AK AP13,CLIP1,SEMA5A,ATP8A2,ARHGAP24 ,CTNNA2,APC,CHN1,RELN,VPS13C,ROR1 ,TNR,CCDC88A
GO:0141124	intracellula r signaling cassette	2.0866936236 319476e-8	ERBB4,NRP1,CDH13,ABL2,SLC8A1,ANKR D6,RERG,LDLRAD4,STARD13,CDC42EP3, GRIK2,RGL1,ITGA1,PIK3R3,RALGPS1,A RHGAP42,NDRG2,FYN,ANK2,GRIN2B,FGF 12,S100B,ESR1,ARHGAP12,PDE4D,DOCK 4,NRXN1,NTRK3,RAPGEF4,ADCYAP1R1,E PHB1,ZDHHC17,CACNA1C,FLT1,RORA,MY O9A,NTRK2,PRKG1,DGKI,MAGI2,AKAP6, DOCK10,GRM5,PRKD1,LRP2,RALGPS2,FE R,RYR2,MAPRE2,SGCD,RAPGEF2,ZMYND1 1,RAPGEF5,INSR,SRGAP3,AKAP13,RALG APA1,SEMA5A,ARHGAP24,DOCK3,CHN1,R ELN,ROR1,VAV3,PRKCA,ERC1,AGO3,CCD C88A
GO:0030154	cell differentiat ion	2.6956311658 411362e-8	ERBB4,ZHX3,APBB2,ATRX,MACF1,CTNND 2,MITF,RTN1,NRP1,NFIA,FRY,MDGA2,A BL2,SLC8A1,EML1,LDLRAD4,LRRC4C,MY EF2,DCLK1,SLC9C1,NCAM1,ITGA1,TCF1 2,TANC1,ITGA8,TCF4,PBX1,PHACTR1,P IK3R3,SLC39A12,DISC1,EYA1,GABRB1, NDRG2,ASAP1,FYN,ANK2,CSMD3,NEGR1, S100B,TOX,PCDH15,ESR1,ABCB5,PDE4D ,LAMA1,CDH11,BRINP1,NRXN1,NTRK3,W DPCP,ADCYAP1R1,EPHB1,ZDHHC17,DNM3 ,BBS2,DPF3,FLT1,RORA,PTPRD,MYO9A, NTRK2,LOXL2,SOX5,PRKG1,DSCAM,FTO, THSD7A,NCAM2,MAGI2,NELL1,AKAP6,CN TN1,DOCK10,OPCML,GRM5,PLEKHB2,PRK

			D1,NRG3,NLGN1,PTPRG,JAM2,GRID2,LR P2,SEMA6D,SYNE1,FER,SNRK,FBXL17,M AP2,PRLR,FAT3,MTPN,SOX6,SGCD,VCL, VCAN,ATAT1,RAPGEF2,AKAP13,NRXN3,P GM5,ASTN1,SEMA5A,ATP8A2,ARHGAP24, CTNNA2,APC,CHN1,RELN,TRPS1,ROR1,K AZN,TNR,CRB1,PRKCA,FMN2,ALPK2,CCD C88A
GO:0048869	cellular developmental process	2.7379951988 07853e-8	*ERBB4,ZHX3,APBB2,ATRX,MACF1,CTNND 2,MITF,RTN1,NRP1,NFIA,FRY,MDGA2,A BL2,SLC8A1,EML1,LDLRAD4,LRRC4C,MY EF2,DCLK1,SLC9C1,NCAM1,ITGA1,TCF1 2,TANC1,ITGA8,TCF4,PBX1,PHACTR1,P IK3R3,SLC39A12,DISC1,EYA1,GABRB1, NDRG2,ASAP1,FYN,ANK2,CSMD3,NEGR1, S100B,TOX,PCDH15,ESR1,ABCB5,PDE4D ,LAMA1,CDH11,BRINP1,NRXN1,NTRK3,W DPCP,ADCYAP1R1,EPHB1,ZDHHC17,DNM3 ,BBS2,DPF3,FLT1,RORA,PTPRD,MYO9A, NTRK2,LOXL2,SOX5,PRKG1,DSCAM,FTO, THSD7A,NCAM2,MAGI2,NELL1,AKAP6,CN TN1,DOCK10,OPCML,GRM5,PLEKHB2,PRK D1,NRG3,NLGN1,PTPRG,JAM2,GRID2,LR P2,SEMA6D,SYNE1,FER,SNRK,FBXL17,M AP2,PRLR,FAT3,MTPN,SOX6,SGCD,VCL, VCAN,ATAT1,RAPGEF2,AKAP13,NRXN3,P GM5,ASTN1,SEMA5A,ATP8A2,ARHGAP24, CTNNA2,APC,CHN1,RELN,TRPS1,ROR1,K AZN,TNR,CRB1,PRKCA,FMN2,ALPK2,CCD C88A*
GO:0099173	postsynapse organization	6.7441214898 1806e-8	*CTNND2,NRP1,TANC1,DISC1,ASAP1,FYN ,GRIN2B,DGKB,NRXN1,CNKSR2,EPHB1,G RID1,DNM3,PTPRD,DOCK10,NLGN1,GRID 2,INSR,NRXN3,RELN*
GO:0035235	ionotropic glutamate receptor signaling pathway	9.6067991113 71116e-8	*GRIK2,GRIK4,GRIN2B,GRIA1,GRID1,GR IK1,GRID2,GRIK3,GRIA4*
GO:0016477	cell migration	9.8095137558 3242e-8	*ERBB4,APBB2,MACF1,MITF,NRP1,CDH13 ,ABL2,DACH1,FRMD5,LDLRAD4,STARD13 ,DCLK1,ITGA1,PHACTR1,PIK3R3,DISC1 ,PEAK1,FYN,LAMA1,CDH11,DOCK4,NTRK 3,WDPCP,EPHB1,FLT1,NTRK2,LOXL2,PR KG1,MAGI2,DOCK10,ENPEP,LDB2,PRKD1 ,NRG3,ATP8A1,PTPRG,JAM2,SEMA6D,FE R,FAT3,MAPRE2,VCL,VCAN,RAPGEF2,IN SR,SRGAP3,ASTN1,SEMA5A,ARHGAP24,C TNNA2,APC,GPC6,RELN,TNR,VAV3,PRKC A,FMN2,CCDC88A*
GO:0007165	signal transduction	2.1463278276 15588e-7	*ERBB4,APBB2,ATRX,ADAMTS18,MACF1,C TNND2,MITF,NRP1,TEAD1,NFIA,CDH13, ABL2,MAML2,SLC8A1,ANKRD6,RERG,LDL RAD4,STARD13,PIK3C3,DCLK1,CDC42EP 3,GRIK2,IGSF11,RGL1,NCAM1,ITGA1,G NG12,ITGA8,GRIK4,ASB3,PIK3R3,SLC3 9A12,DISC1,RALGPS1,ARHGAP42,EYA1, GPR158,GABRB1,NDRG2,FYN,ANK2,GRIN 2B,STK32A,GRIA1,FGF12,DGKB,CACNG2*

			,S100B,ESR1,ARHGAP12,PDE4D,PRKACB,GNG2,LAMA1,DOCK4,MAST4,ITPR2,NRXN1,NTRK3,WDPCP,MAGI1,RAPGEF4,CNKSR2,ADCYAP1R1,EPHB1,PRICKLE2,GRID1,ZDHHC17,DCDC1,CACNA1C,PRKAA2,BBS2,FLT1,PPP1R12B,RORA,PTPRD,CDC14B,MYO9A,FOXN3,NTRK2,GRIK1,PRKG1,DSCAM,DGKI,MAGI2,AKAP6,IQCJ-SCHIP1,RNF152,CNTN1,DOCK10,GRM5,PRKD1,NRG3,NLGN1,PTPRG,OR9Q1,GRID2,LRP2,SEMA6D,SYNE1,RALGPS2,FER,SNRK,RYR2,FBXL17,PRLR,PTPRA,GRIK3,STXBP4,MAPRE2,SGCD,RIC8B,SEZ6L,ATAT1,RBMS3,RAPGEF2,ZMYND11,RAPGEF5,INSR,RGS6,SRGAP3,AKAP13,NRXN3,RALGAPA1,NSG1,CPE,SEMA5A,ARHGAP24,GRIA4,CNIH3,DOCK3,APC,GPC6,CHN1,RELN,ROR1,DTNA,VAV3,PRKCA,INPP5A,FMN2,ERC1,AGO3,ALPK2,CCDC88A
GO:0016358	dendrite development	2.76988259803178e-7	CTNND2,NRP1,DCLK1,PHACTR1,DISC1,ASAP1,FYN,CSMD3,EPHB1,DNM3,PTPRD,PRKG1,DSCAM,DOCK10,NLGN1,SYNE1,MAP2,FAT3,RAPGEF2,CTNNA2,RELN
GO:0048468	cell development	2.8344370789338016e-7	ERBB4,APBB2,ATRX,MACF1,CTNND2,MITF,NRP1,FRY,ABL2,SLC8A1,EML1,LRRC4C,DCLK1,NCAM1,ITGA1,PBX1,PHACTR1,PIK3R3,SLC39A12,DISC1,GABRB1,ASAP1,FYN,ANK2,CSMD3,NEGR1,S100B,TOX,PCDH15,ESR1,PDE4D,LAMA1,CDH11,BRINP1,NRXN1,NTRK3,WDPCP,EPHB1,ZDHHC17,DNM3,BBS2,RORA,PTPRD,MYO9A,NTRK2,PRKG1,DSCAM,NCAM2,MAGI2,AKAP6,CNTN1,DOCK10,OPCML,GRM5,PRKD1,NLGN1,PTPRG,JAM2,GRID2,LRP2,SEMA6D,SYNE1,FER,SNRK,MAP2,FAT3,SGCD,VCL,VCAN,ATAT1,RAPGEF2,AKAP13,NRXN3,PGM5,SEMA5A,ATP8A2,CTNNA2,CHN1,RELN,ROR1,TNR,CRB1,PRKCA,FMN2,ALPK2,CCDC88A
GO:0007610	behavior	4.2428867032037527e-7	ABL2,DACH1,GRIK2,CLSTN2,TANC1,ITGA8,APBA2,FYN,SLC1A2,GRIN2B,GRIA1,NEGR1,FGF12,S100B,PCDH15,BRINP1,NRXN1,GRID1,BBS2,NTRK2,DSCAM,DGKI,CNTN1,GRM5,ATP8A1,NLGN1,INSR,ATXN1,GABRG2,NRXN3,ASTN1,KCND2,ATP8A2,RELN,TNR
GO:0007215	glutamate receptor signaling pathway	4.36136997194045e-7	GRIK2,GRIK4,FYN,GRIN2B,GRIA1,GRID1,GRIK1,GRM5,GRID2,GRIK3,GRIA4
GO:0031346	positive regulation of cell projection organization	6.673601216077046e-7	MACF1,NRP1,ABL2,CDC42EP3,DISC1,FYN,NEGR1,TOX,NRXN1,NTRK3,DNM3,PTPRD,NTRK2,DSCAM,MAGI2,CNTN1,PRKD1,NLGN1,RAPGEF2,SEMA5A,ATP8A2,APC,RELN,ROR1,CCDC88A
GO:0048813	dendrite morphogenesis	0.000001303769847761657	CTNND2,NRP1,DCLK1,PHACTR1,FYN,EPHB1,DNM3,PTPRD,DSCAM,DOCK10,NLGN1,SYNE1,MAP2,RAPGEF2,CTNNA2,RELN

GO:0003012	muscle system process	0.0000013672212273203492	KCNMA1,APBB2,UTRN,SLC8A1,ASB3,ARHGAP42,ANK2,FGF12,PDE4D,DOCK4,ABCC9,CACNA1C,BBS2,PPP1R12B,PRKG1,AKAP6,PRKD1,RYR2,CACNB2,MTPN,SGCD,KCND2,ATP8A2,CALD1,DTNA,PRKCA,KCNE4
GO:0006936	muscle contraction	0.0000014667196381866337	KCNMA1,APBB2,UTRN,SLC8A1,ASB3,ARHGAP42,ANK2,FGF12,PDE4D,DOCK4,ABCC9,CACNA1C,BBS2,PPP1R12B,PRKG1,PRKD1,RYR2,CACNB2,SGCD,KCND2,ATP8A2,CALD1,DTNA,KCNE4
GO:0007409	axonogenesis	0.0000018504248561084967	APBB2,MACF1,NRP1,LRRC4C,DCLK1,NCAM1,DISC1,FYN,S100B,CDH11,NRXN1,EPHB1,ZDHHC17,PTPRD,NTRK2,PRKG1,DSCAM,CNTN1,SEMA6D,MAP2,VCL,NRXN3,SEMA5A,ATP8A2,CTNNA2,CHN1,RELN,TNR
GO:0048870	cell motility	0.0000021502027936913314	ERBB4,APBB2,MACF1,MITF,NRP1,CDH13,ABL2,DACH1,FRMD5,LDLRAD4,STARD13,DCLK1,SLC9C1,ITGA1,PHACTR1,PIK3R3,DISC1,PEAK1,FYN,LAMA1,CDH11,DOCK4,NTRK3,WDPCP,EPHB1,BBS2,FLT1,NTRK2,LOXL2,PRKG1,MAGI2,DOCK10,ENPEP,LDB2,PRKD1,NRG3,ATP8A1,PTPRG,JAM2,SEMA6D,FER,FAT3,MAPRE2,VCL,VCAN,RAPGEF2,INSR,SRGAP3,ASTN1,SEMA5A,ARHGAP24,CTNNA2,APC,GPC6,RELN,TNR,VAV3,PRKCA,FMN2,CCDC88A
GO:0050807	regulation of synapse organization	0.0000024472136043285076	CLSTN2,TANC1,DISC1,GPR158,ASAP1,FYN,GRIN2B,NEGR1,DGKB,NRXN1,EPHB1,CTTNBP2,GRID1,DNM3,PTPRD,NTRK2,NLGN1,GRID2,CTNNA2,RELN
GO:1990806	ligand-gated ion channel signaling pathway	0.000002510263881523522	GRIK2,GRIK4,GRIN2B,GRIA1,GRID1,GRIK1,GRID2,GRIK3,GRIA4
GO:0007264	small GTPase-mediated signal transduction	0.0000027085 63556413108	NRP1,CDH13,ABL2,RERG,STARD13,CDC42EP3,RGL1,RALGPS1,ARHGAP42,ARHGAP12,DOCK4,RAPGEF4,ADCYAP1R1,MYO9A,DGKI,DOCK10,RALGPS2,MAPRE2,RAPGEF2,RAPGEF5,SRGAP3,AKAP13,RALGAPA1,ARHGAP24,DOCK3,CHN1,RELN,VAV3,CCDC88A
GO:0072359	circulatory system development	0.0000029293718601619894	ERBB4,NRP1,CDH13,SLC8A1,STARD13,PIK3R3,SLC39A12,EYA1,ANK2,FGF12,LAMA1,CDH11,NRXN1,NTRK3,WDPCP,EPHB1,GREB1L,ABCC9,CACNA1C,FLT1,RORA,NTRK2,LOXL2,PRKG1,THSD7A,AKAP6,ENPEP,PRKD1,LRP2,SYNE1,RYR2,SOX6,SGCD,RAPGEF2,INSR,AKAP13,IMMP2L,NRXN3,CPE,SEMA5A,CALD1,ARHGAP24,APC,VAV3,PRKCA,ALPK2
GO:0044057	regulation of system process	0.0000031383 67636966731	SLC8A1,GRIK2,IGSF11,CORO2B,ASB3,ARHGAP42,ANK2,GRIN2B,FGF12,PDE4D,DOCK4,NRXN1,ABCC9,CACNA1C,PPP1R12B,PRKG1,FTO,AKAP6,PRKD1,NLGN1,JAM2,SYNE1,RYR2,CACNB2,MTPN,KCND2,RELN,TNR,PRKCA,KCNE4
GO:0050803	regulation of synapse	0.0000040224 66057793396	CLSTN2,TANC1,DISC1,GPR158,ASAP1,FYN,GRIN2B,NEGR1,DGKB,NRXN1,EPHB1,CTTNBP2,GRID1,DNM3,PTPRD,NTRK2,NL

	structure or activity		*GN1,GRID2,CTNNA2,RELN*
GO:0051966	regulation of synaptic transmission, glutamatergic	0.0000060187 09200952947	*GRIK2,DISC1,GRIN2B,CACNG2,NRXN1,G RIK1,DGKI,GRM5,NLGN1,GRIK3,RELN,T NR*
GO:0003013	circulatory system process	0.0000062008 08511794539	*KCNMA1,SLC8A1,SLC2A13,SLCO3A1,ITG A1,CORO2B,ASB3,ARHGAP42,FYN,ANK2, SLC1A2,FGF12,PDE4D,DOCK4,ABCC9,CA CNA1C,BBS2,PRKG1,ENPEP,ATP8A1,LRP 2,RYR2,CACNB2,SGCD,INSR,AKAP13,IM MP2L,KCND2,SLC24A3,SLC4A4,KCNE4*
GO:0010976	positive regulation of neuron projection development	0.0000063281 59637756768	*ABL2,DISC1,FYN,NEGR1,TOX,NRXN1,NT RK3,NTRK2,MAGI2,CNTN1,PRKD1,NLGN1 ,RAPGEF2,ATP8A2,RELN,ROR1*
GO:0061564	axon development	0.0000068209 12787406052	*APBB2,MACF1,NRP1,LRRC4C,DCLK1,NCA M1,DISC1,FYN,S100B,CDH11,NRXN1,EP HB1,ZDHHC17,PTPRD,NTRK2,PRKG1,DSC AM,NCAM2,CNTN1,SEMA6D,MAP2,VCL,NR XN3,SEMA5A,ATP8A2,CTNNA2,CHN1,REL N,TNR*
GO:0051716	cellular response to stimulus	0.0000080515 44783713974	*ERBB4,APBB2,ATRX,ADAMTS18,MACF1,C TNND2,MITF,NRP1,TEAD1,NFIA,CDH13, ABL2,MAML2,SLC8A1,ANKRD6,RERG,LDL RAD4,STARD13,PIK3C3,DCLK1,CDC42EP 3,GRIK2,IGSF11,RGL1,NRIP1,NCAM1,I TGA1,GNG12,CORO2B,ITGA8,VPS41,GRI K4,ZBTB20,ASB3,PIK3R3,SLC39A12,DI SC1,RALGPS1,ARHGAP42,EYA1,GPR158, GABRB1,NDRG2,ST8SIA1,FYN,ANK2,SLC 1A2,GRIN2B,STK32A,GRIA1,FGF12,DGK B,CACNG2,S100B,ESR1,ARHGAP12,PDE4 D,PRKACB,GNG2,LAMA1,DOCK4,MAST4,I TPR2,BRINP1,NRXN1,NTRK3,WDPCP,MAG I1,RAPGEF4,CNKSR2,ADCYAP1R1,EPHB1 ,PRICKLE2,GRID1,ZDHHC17,DCDC1,CAC NA1C,PRKAA2,BBS2,DPF3,FLT1,DLG2,P PP1R12B,RORA,PTPRD,CDC14B,MYO9A,F OXN3,NTRK2,GRIK1,PRKG1,DSCAM,DGKI ,FTO,MAGI2,AKAP6,IQCJ- SCHIP1,RNF152,CNTN1,DOCK10,GRM5,P RKD1,NRG3,NLGN1,PTPRG,OR9Q1,GRID2 ,LRP2,SEMA6D,SYNE1,RALGPS2,FER,SN RK,RYR2,FBXL17,PRLR,PTPRA,GRIK3,S TXBP4,MTPN,MAPRE2,SGCD,MSRA,RIC8B ,SEZ6L,ATAT1,RBMS3,RAPGEF2,ZMYND1 1,RAPGEF5,INSR,RGS6,SRGAP3,AKAP13 ,IMMP2L,CHCHD6,GABRG2,NRXN3,RALGA PA1,NSG1,CPE,KCND2,SEMA5A,ARHGAP2 4,GRIA4,CNIH3,DOCK3,APC,GPC6,CHN1 ,RELN,VPS13C,ROR1,TNR,DTNA,CRB1,V AV3,PRKCA,INPP5A,FMN2,ERC1,AGO3,A LPK2,CCDC88A*
GO:0030334	regulation	0.0000095824	*ERBB4,MACF1,MITF,NRP1,CDH13,ABL2,*

	of cell migration	37430533792	DACH1,FRMD5,LDLRAD4,STARD13,PHACTR1,PIK3R3,LAMA1,CDH11,DOCK4,NTRK3,WDPCP,FLT1,PRKG1,MAGI2,DOCK10,LDB2,PRKD1,NRG3,ATP8A1,PTPRG,JAM2,SEMA6D,FER,MAPRE2,VCL,RAPGEF2,INSR,SRGAP3,SEMA5A,CTNNA2,APC,RELN,TNR,PRKCA
GO:0034220	monoatomic ion transmembrane transport	0.00000976371743248 0526	KCNMA1,UTRN,SLC8A1,SLC40A1,SLC9C1,GRIK2,GRIK4,GABRG1,SLC39A12,GABRB1,FYN,ANK2,SLC1A2,GRIN2B,GRIA1,FGF12,CACNG2,KCNN3,PDE4D,ITPR2,ADCYAP1R1,DPP6,GRID1,ABCC9,CACNA1C,GRIK1,AKAP6,GRM5,PRKD1,ATP8A1,GRID2,RYR2,GRIK3,CACNB2,GABRG2,KCND2,SLC24A3,GRIA4,RELN,SLC4A4,KCNE4,KCNS3
GO:0097120	receptor localization to synapse	0.0000100853 84546317328	ERBB4,CACNG2,NRXN1,DLG2,NBEA,NLGN1,NRXN3,NSG1,GPC6,RELN,CEP112
GO:0098609	cell-cell adhesion	0.0000137079 39986257894	LPP,ADAMTS18,CTNND2,CDH13,ABL2,PCDH7,LRRC4C,CADM2,HMCN1,IGSF11,ITGA1,CLSTN2,ITGA8,FYN,NEGR1,PCDH15,MEGF11,CDH11,NRXN1,MAGI1,DLG2,PTPRD,TLN2,PRKG1,DSCAM,NCAM2,CNTN1,NLGN1,JAM2,GRID2,FER,FAT3,PCDH9,VCL,NRXN3,ASTN1,CTNNA2,TNR,CRB1,PRKCA
GO:0048522	positive regulation of cellular process	0.0000139976 24392621482	SAMD4A,ERBB4,KCNMA1,ZHX3,APBB2,ATRX,MACF1,MITF,TRIM23,NRP1,TEAD1,NFIA,CDH13,ABL2,UTRN,MAML2,ANKRD6,CTIF,TBC1D5,FRMD5,SLC40A1,SLCO3A1,CDC42EP3,GRIK2,IGSF11,NRIP1,ITGA1,CLSTN2,TCF12,CORO2B,ITGA8,ZBTB20,ZNF407,TCF4,PBX1,PIK3R3,DISC1,FMN1,EYA1,GPR158,ASAP1,ST8SIA1,FYN,ANK2,SLC1A2,CADPS,GRIN2B,GRIA1,NEGR1,CACNG2,S100B,TOX,ESR1,KLF12,PDE4D,ERC2,FCHSD2,LAMA1,DOCK4,BRINP1,NRXN1,NTRK3,MAGI1,RAPGEF4,ADCYAP1R1,EPHB1,CREB5,TNRC6B,ZDHHC17,PRKAA2,DNM3,ASXL3,DPF3,FLT1,EDIL3,RORA,PTPRD,CDC14B,NTRK2,LOXL2,SOX5,DSCAM,DGKI,FTO,MAGI2,NELL1,AKAP6,IQCJ-SCHIP1,RNF152,CNTN1,GRM5,LDB2,PRKD1,ATP8A1,NLGN1,JAM2,GRID2,LRP2,SEMA6D,SYNE1,FER,RYR2,MAP2,PRLR,CACNB2,STXBP4,MED15,MTPN,MAPRE2,SOX6,PDE4DIP,VCAN,ATAT1,RBMS3,RAPGEF2,INSR,AKAP13,NSG1,CLIP1,SEMA5A,ATP8A2,SLC24A3,APC,RELN,ROR1,SLC4A4,TNR,VAV3,NPAS3,PRKCA,KMT2C,FMN2,AGO3,CCDC88A,ARNT2
GO:0099175	regulation of postsynapse organization	0.0000152147 31121117651	TANC1,DISC1,ASAP1,FYN,GRIN2B,DGKB,NRXN1,GRID1,DNM3,PTPRD,NLGN1,GRID2,RELN
GO:2000145	regulation	0.0000186412	ERBB4,MACF1,MITF,NRP1,CDH13,ABL2,DACH1,FRMD5,LDLRAD4,STARD13,PHACT

	of cell motility	95712171672	R1,PIK3R3,LAMA1,CDH11,DOCK4,NTRK3,WDPCP,BBS2,FLT1,PRKG1,MAGI2,DOCK10,LDB2,PRKD1,NRG3,ATP8A1,PTPRG,JAM2,SEMA6D,FER,MAPRE2,VCL,RAPGEF2,INSR,SRGAP3,SEMA5A,CTNNA2,APC,RELN,TNR,PRKCA
GO:0040012	regulation of locomotion	0.0000197601 82977511903	ERBB4,MACF1,MITF,NRP1,CDH13,ABL2,DACH1,FRMD5,LDLRAD4,STARD13,PHACTR1,PIK3R3,LAMA1,CDH11,DOCK4,NTRK3,WDPCP,BBS2,FLT1,PRKG1,DSCAM,MAGI2,DOCK10,LDB2,PRKD1,NRG3,ATP8A1,PTPRG,JAM2,SEMA6D,FER,MAPRE2,VCL,RAPGEF2,INSR,SRGAP3,SEMA5A,CTNNA2,APC,RELN,TNR,PRKCA
GO:0030029	actin filament-based process	0.0000201674 0879651108	NRP1,ABL2,PHACTR3,FRMD5,STARD13,CDC42EP3,HMCN1,CORO2B,FAM171A1,PHACTR1,FMN1,ANK2,FGF12,PCDH15,ARHGAP12,PDE4D,FCHSD2,ABCC9,CACNA1C,PRKG1,THSD7A,PRKD1,MICAL3,FER,RYR2,CACNB2,MTPN,SGCD,AKAP13,PGM5,SEMA5A,CALD1,CTNNA2,KCNE4,FMN2,CCDC88A
GO:0007010	cytoskeleton organization	0.0000257883 71758174694	ATRX,MACF1,NRP1,ABL2,PHACTR3,EML1,FRMD5,STARD13,DCLK1,CDC42EP3,HMCN1,CORO2B,TTLL11,FAM171A1,PHACTR1,SLC39A12,DISC1,FMN1,ANK2,PCDH15,ARHGAP12,FCHSD2,MAST4,WDPCP,PRKAA2,CCSER2,BBS2,CDC14B,TLN2,PRKG1,THSD7A,IQCJ-SCHIP1,PRKD1,NLGN1,MICAL3,FER,MAP2,MTPN,MAPRE2,PDE4DIP,MPDZ,ATAT1,AKAP13,PGM5,CLIP1,SEMA5A,ATP8A2,CALD1,CTNNA2,APC,PARD3B,FMN2,CCDC88A
GO:0048518	positive regulation of biological process	0.0000298424 701611029	SAMD4A,ERBB4,KCNMA1,ZHX3,APBB2,ATRX,MACF1,MITF,TRIM23,NRP1,TEAD1,NFIA,CDH13,ABL2,UTRN,MAML2,SLC8A1,SLC2A13,ANKRD6,CTIF,TBC1D5,FRMD5,SLC40A1,SLCO3A1,CDC42EP3,GRIK2,IGSF11,NRIP1,ITGA1,CLSTN2,TCF12,CORO2B,ITGA8,ZBTB20,ZNF407,TCF4,PBX1,PIK3R3,SLC39A12,DISC1,FMN1,EYA1,GPR158,ASAP1,ST8SIA1,FYN,ANK2,SLC1A2,CADPS,GRIN2B,GRIA1,NEGR1,FGF12,CACNG2,S100B,TOX,ESR1,KLF12,PDE4D,ERC2,FCHSD2,LAMA1,DOCK4,BRINP1,NRXN1,NTRK3,BCL2L13,MAGI1,RAPGEF4,ADCYAP1R1,EPHB1,CREB5,TNRC6B,ZDHHC17,PRKAA2,DNM3,BBS2,ASXL3,DPF3,FLT1,EDIL3,RORA,PTPRD,CDC14B,NTRK2,LOXL2,SOX5,PRKG1,DSCAM,DGKI,FTO,MAGI2,NELL1,AKAP6,IQCJ-SCHIP1,RNF152,CNTN1,GRM5,LDB2,PRKD1,ATP8A1,NLGN1,JAM2,GRID2,LRP2,SEMA6D,SYNE1,FER,RYR2,MAP2,SUSD4,PRLR,CACNB2,STXBP4,MED15,MTPN,MAPRE2,SOX6,PDE4DIP,VCAN,ATAT1,RBMS3,RAPGEF2,INSR,AKAP13,NSG1,CLIP1,SEMA5A,ATP8A2,SLC24A3,APC,RELN,ROR1

			,SLC4A4,TNR,VAV3,NPAS3,PRKCA,KMT2C,FMN2,AGO3,CCDC88A,ARNT2
GO:0051179	localization	0.0000408707 2680075381	ERBB4,KCNMA1,ATRX,MACF1,TRIM23,NRP1,CDH13,ABL2,UTRN,SLC8A1,SLC2A13,SIAH3,TBC1D5,SLC40A1,SLCO3A1,PIK3C3,DCLK1,SLC9C1,GRIK2,IGSF11,NKAIN3,NRIP1,CORO2B,EVI5,ITGA8,VPS41,GRIK4,ASB3,GABRG1,SLC39A12,DISC1,SLC35F1,GPR158,GABRB1,TMEM241,APBA2,ASAP1,FYN,ANK2,SLC1A2,CADPS,LRBA,GRIN2B,GRIA1,FGF12,CACNG2,ESR1,ARHGAP12,KCNN3,ABCB5,MEGF11,PDE4D,ERC2,FCHSD2,CDS2,ITPR2,NRXN1,WDPCP,RAPGEF4,ADCYAP1R1,DPP6,GRID1,ZDHHC17,ABCC9,GSG1L,CACNA1C,PRKAA2,DNM3,BBS2,EXOC4,DLG2,SCFD2,NTRK2,GRIK1,PRKG1,DGKI,FTO,NBEA,MAGI2,AKAP6,CNTN1,GRM5,PRKD1,ATP8A1,NLGN1,MICAL3,GRID2,LRP2,SYNE1,FER,MON2,RYR2,MAP2,PRLR,GRIK3,CACNB2,STXBP4,ESYT2,MAPRE2,SGCD,VCL,RAPGEF2,INSR,IMMP2L,ATXN1,GABRG2,UNC13C,NRXN3,NSG1,CPE,KCND2,ATP8A2,SLC24A3,GRIA4,CNIH3,APC,GPC6,PARD3B,RELN,VPS13C,CEP112,STON1-GTF2A1L,SLC4A4,CRB1,VAV3,KCNE4,KCNS3,FMN2,ERC1,CCDC88A
GO:0055085	transmembrane transport	0.0000418021 45507388965	KCNMA1,UTRN,SLC8A1,SLC2A13,SLC40A1,SLCO3A1,SLC9C1,GRIK2,GRIK4,GABRG1,SLC39A12,SLC35F1,GABRB1,TMEM241,FYN,ANK2,SLC1A2,GRIN2B,GRIA1,FGF12,CACNG2,KCNN3,ABCB5,PDE4D,ITPR2,NRXN1,ADCYAP1R1,DPP6,GRID1,ABCC9,CACNA1C,GRIK1,AKAP6,GRM5,PRKD1,ATP8A1,NLGN1,GRID2,LRP2,RYR2,GRIK3,CACNB2,STXBP4,INSR,GABRG2,KCND2,SLC24A3,GRIA4,CNIH3,RELN,SLC4A4,KCNE4,KCNS3
GO:0021953	central nervous system neuron differentiation	0.0000449428 4597105402	NRP1,MDGA2,DCLK1,DISC1,GABRB1,TOX,CDH11,BRINP1,NRXN1,EPHB1,RORA,NTRK2,GRID2,MAP2,MTPN,RAPGEF2
GO:0006811	monoatomic ion transport	0.0000756062 6451255241	KCNMA1,UTRN,SLC8A1,SLC40A1,SLCO3A1,SLC9C1,GRIK2,NKAIN3,GRIK4,GABRG1,SLC39A12,GABRB1,FYN,ANK2,SLC1A2,GRIN2B,GRIA1,FGF12,CACNG2,KCNN3,PDE4D,ITPR2,ADCYAP1R1,DPP6,GRID1,ABCC9,CACNA1C,GRIK1,AKAP6,CNTN1,GRM5,PRKD1,ATP8A1,GRID2,LRP2,RYR2,GRIK3,CACNB2,GABRG2,KCND2,SLC24A3,GRIA4,RELN,SLC4A4,KCNE4,KCNS3
GO:0040011	locomotion	0.0001231162 2950567547	ERBB4,MACF1,MITF,NRP1,CDH13,ABL2,DACH1,FRMD5,LDLRAD4,STARD13,ITGA1,PHACTR1,PIK3R3,LAMA1,CDH11,DOCK4,NTRK3,WDPCP,EPHB1,BBS2,FLT1,PRKG1,DSCAM,MAGI2,DOCK10,LDB2,PRKD1,NRG3,ATP8A1,PTPRG,JAM2,SEMA6D,FER,

			MAPRE2,VCL,RAPGEF2,INSR,SRGAP3,SE MA5A,CTNNA2,APC,RELN,TNR,VAV3,PRK CA
GO:0031503	protein-containing complex localization	0.0001283788 1272203362	*ERBB4,CACNG2,NRXN1,WDPCP,GSG1L,DN M3,DLG2,NBEA,NLGN1,SYNE1,SGCD,NRX N3,NSG1,GPC6,RELN,CEP112*
GO:0051130	positive regulation of cellular component organization	0.0001519867 036360592	*ATRX,MACF1,NRP1,ABL2,TBC1D5,CDC42 EP3,CLSTN2,DISC1,FMN1,ASAP1,FYN,N EGR1,TOX,ERC2,FCHSD2,NRXN1,NTRK3, EPHB1,DNM3,PTPRD,NTRK2,DSCAM,MAGI 2,CNTN1,PRKD1,ATP8A1,NLGN1,GRID2, SYNE1,FER,MAPRE2,PDE4DIP,ATAT1,RA PGEF2,INSR,CLIP1,SEMA5A,ATP8A2,AP C,RELN,ROR1,CCDC88A*
GO:0007166	cell surface receptor signaling pathway	0.0001531278 0095795821	*ERBB4,ADAMTS18,MACF1,CTNND2,MITF, NRP1,NFIA,CDH13,MAML2,ANKRD6,LDLR AD4,GRIK2,IGSF11,NCAM1,ITGA1,ITGA 8,GRIK4,PIK3R3,DISC1,EYA1,NDRG2,F YN,GRIN2B,GRIA1,PDE4D,PRKACB,LAMA 1,NRXN1,NTRK3,WDPCP,MAGI1,ADCYAP1 R1,EPHB1,PRICKLE2,GRID1,ZDHHC17,P RKAA2,BBS2,FLT1,RORA,PTPRD,NTRK2, GRIK1,DSCAM,DGKI,MAGI2,CNTN1,GRM5 ,PRKD1,NRG3,NLGN1,PTPRG,GRID2,LRP 2,SEMA6D,SYNE1,FER,FBXL17,PRLR,PT PRA,GRIK3,STXBP4,RBMS3,RAPGEF2,ZM YND11,INSR,CPE,SEMA5A,GRIA4,DOCK3 ,APC,CHN1,RELN,ROR1,VAV3,PRKCA,AL PK2,CCDC88A*
GO:0007158	neuron cell-cell adhesion	0.0001881272 185176868	*NRXN1,NCAM2,NLGN1,NRXN3,ASTN1,TNR*
GO:0051239	regulation of multicellular organismal process	0.0003384919 9579465215	*ERBB4,ADAMTS18,MACF1,MITF,NRP1,AB L2,SLC8A1,LDLRAD4,STARD13,GRIK2,I GSF11,CLSTN2,CORO2B,ZBTB20,ASB3,P BX1,SLC39A12,DISC1,ARHGAP42,NDRG2 ,FYN,ANK2,GRIN2B,FGF12,TOX,ESR1,P DE4D,LAMA1,DOCK4,BRINP1,NRXN1,WDP CP,EPHB1,ABCC9,CACNA1C,BBS2,FLT1, PPP1R12B,RORA,PTPRD,NTRK2,LOXL2,S OX5,PRKG1,DSCAM,FTO,NELL1,AKAP6,G RM5,PRKD1,NLGN1,PTPRG,JAM2,GRID2, LRP2,SEMA6D,SYNE1,FER,RYR2,MAP2,P RLR,CACNB2,MTPN,MAPRE2,SOX6,VCL,V CAN,RAPGEF2,INSR,KCND2,SEMA5A,ATP 8A2,APC,RELN,TRPS1,TNR,VAV3,PRKCA ,KCNE4,ALPK2*
GO:0009966	regulation of signal transduction	0.0003554651 1166465936	*ERBB4,MACF1,CTNND2,NRP1,CDH13,ABL 2,ANKRD6,LDLRAD4,STARD13,GRIK2,IG SF11,NCAM1,ITGA1,ITGA8,DISC1,RALG PS1,ARHGAP42,EYA1,GPR158,NDRG2,FY N,GRIN2B,CACNG2,S100B,ESR1,ARHGAP 12,PDE4D,PRKACB,LAMA1,NRXN1,NTRK3 ,CNKSR2,ADCYAP1R1,EPHB1,ZDHHC17,P RKAA2,FLT1,RORA,PTPRD,MYO9A,NTRK2 ,DGKI,MAGI2,AKAP6,IQCJ-SCHIP1,RNF152,GRM5,PRKD1,NLGN1,LR P2,SYNE1,FER,FBXL17,PRLR,MAPRE2,R*

			IC8B,SEZ6L,ATAT1,RBMS3,RAPGEF2,ZM YND11,INSR,RGS6,SRGAP3,AKAP13,RAL GAPA1,SEMA5A,ARHGAP24,CNIH3,DOCK3 ,APC,GPC6,CHN1,RELN,ROR1,VAV3,PRK CA,INPP5A,AGO3,ALPK2,CCDC88A
GO:0050793	regulation of developmental process	0.0003708087 5698658467	*ERBB4,ZHX3,MACF1,MITF,NRP1,SLC8A1 ,LDLRAD4,LRRC4C,CDC42EP3,CLSTN2,T CF12,TCF4,PBX1,FAM171A1,SLC39A12, DISC1,EYA1,ASAP1,FYN,CSMD3,S100B, TOX,ESR1,LAMA1,BRINP1,NRXN1,WDPCP ,EPHB1,DNM3,BBS2,DPF3,FLT1,RORA,P TPRD,MYO9A,NTRK2,LOXL2,SOX5,DSCAM ,FTO,NELL1,AKAP6,GRM5,PLEKHB2,PRK D1,NLGN1,JAM2,GRID2,LRP2,SEMA6D,S YNE1,MAP2,PRLR,FAT3,MTPN,SOX6,VCL ,VCAN,ATAT1,RAPGEF2,INSR,SEMA5A,A TP8A2,APC,CHN1,RELN,TRPS1,TNR,PRK CA,ALPK2*
GO:1901888	regulation of cell junction assembly	0.0003820641 910571218	*MACF1,NRP1,CLSTN2,FMN1,PEAK1,NEGR 1,NRXN1,WDPCP,EPHB1,PTPRD,NTRK2,N LGN1,GRID2,PTPRA,VCL,RAPGEF2*
GO:0050896	response to stimulus	0.0004045873 736272355	*ERBB4,KCNMA1,APBB2,ATRX,ADAMTS18, MACF1,CTNND2,MITF,TRIM23,NRP1,TEA D1,NFIA,CDH13,ABL2,MAML2,SLC8A1,D ACH1,ANKRD6,RERG,TBC1D5,LDLRAD4,S TARD13,PIK3C3,DCLK1,CDC42EP3,HMCN 1,GRIK2,IGSF11,RGL1,NRIP1,NCAM1,I TGA1,TCF12,GNG12,TANC1,CORO2B,ITG A8,VPS41,GRIK4,ZBTB20,ASB3,PIK3R3 ,SLC39A12,DISC1,RALGPS1,ARHGAP42, EYA1,GPR158,GABRB1,NDRG2,ST8SIA1, FYN,ANK2,SLC1A2,GRIN2B,STK32A,GRI A1,FGF12,DGKB,CACNG2,S100B,PCDH15 ,ESR1,ARHGAP12,PDE4D,PRKACB,GNG2, LAMA1,DOCK4,MAST4,ITPR2,BRINP1,NR XN1,NTRK3,WDPCP,MAGI1,RAPGEF4,CNK SR2,ADCYAP1R1,EPHB1,PRICKLE2,GRID 1,ZDHHC17,ABCC9,DCDC1,CACNA1C,PRK AA2,BBS2,DPF3,FLT1,DLG2,PPP1R12B, RORA,PTPRD,CDC14B,MYO9A,FOXN3,NTR K2,LOXL2,GRIK1,SOX5,PRKG1,DSCAM,D GKI,FTO,MAGI2,AKAP6,IQCJ- SCHIP1,RNF152,CNTN1,DOCK10,GRM5,P RKD1,NRG3,NLGN1,PTPRG,OR9Q1,GRID2 ,LRP2,SEMA6D,SYNE1,RALGPS2,FER,SN RK,RYR2,FBXL17,SUSD4,PRLR,PTPRA,G RIK3,STXBP4,MTPN,MAPRE2,SOX6,SGCD ,MSRA,RIC8B,VCL,SEZ6L,ATAT1,RBMS3 ,RAPGEF2,ZMYND11,RAPGEF5,INSR,RGS 6,SRGAP3,AKAP13,IMMP2L,CHCHD6,GAB RG2,NRXN3,RALGAPA1,NSG1,CPE,KCND2 ,SEMA5A,ATP8A2,ARHGAP24,GRIA4,CNI H3,DOCK3,CTNNA2,APC,GPC6,CHN1,REL N,VPS13C,ROR1,TNR,DTNA,CRB1,VAV3, PRKCA,KMT2C,INPP5A,FMN2,ERC1,AGO3 ,ALPK2,CCDC88A,ARNT2,AFF3*
GO:0048167	regulation of synaptic	0.0004937956 424297483	*GRIK2,IGSF11,GRIN2B,GRIA1,S100B,E RC2,NTRK2,DGKI,GRM5,GRID2,RAPGEF2*

	plasticity		,UNC13C,NSG1,RELN,TNR,ERC1
GO:0099505	regulation of presynaptic membrane potential	0.0006043648 236529639	GRIK2,GRIK4,GABRB1,GRIN2B,GRIA1,G RIK3,GRIA4
GO:1902531	regulation of intracellular signal transduction	0.0006825947 601046064	ERBB4,NRP1,CDH13,ABL2,ANKRD6,LDLR AD4,STARD13,GRIK2,ITGA1,RALGPS1,A RHGAP42,NDRG2,FYN,S100B,ESR1,ARHG AP12,PDE4D,PRKACB,NRXN1,NTRK3,ADC YAP1R1,EPHB1,ZDHHC17,PRKAA2,FLT1, RORA,MYO9A,NTRK2,DGKI,MAGI2,AKAP6 ,IQCJ-SCHIP1,RNF152,GRM5,PRKD1,NLGN1,FE R,MAPRE2,SEZ6L,RAPGEF2,ZMYND11,IN SR,SRGAP3,AKAP13,RALGAPA1,SEMA5A, ARHGAP24,DOCK3,CHN1,RELN,ROR1,VAV 3,PRKCA,AGO3,CCDC88A
GO:0006810	transport	0.0006880726 390757017	ERBB4,KCNMA1,MACF1,TRIM23,NRP1,CD H13,ABL2,UTRN,SLC8A1,SLC2A13,TBC1 D5,SLC40A1,SLCO3A1,PIK3C3,DCLK1,S LC9C1,GRIK2,NKAIN3,EVI5,VPS41,GRI K4,GABRG1,SLC39A12,SLC35F1,GPR158 ,GABRB1,TMEM241,APBA2,FYN,ANK2,SL C1A2,CADPS,GRIN2B,GRIA1,FGF12,CAC NG2,ARHGAP12,KCNN3,ABCB5,MEGF11,P DE4D,ERC2,FCHSD2,ITPR2,NRXN1,WDPC P,RAPGEF4,ADCYAP1R1,DPP6,GRID1,ZD HHC17,ABCC9,GSG1L,CACNA1C,DNM3,BB S2,EXOC4,DLG2,SCFD2,NTRK2,GRIK1,P RKG1,DGKI,MAGI2,AKAP6,CNTN1,GRM5, PRKD1,ATP8A1,NLGN1,MICAL3,GRID2,L RP2,SYNE1,FER,MON2,RYR2,MAP2,PRLR ,GRIK3,CACNB2,STXBP4,ESYT2,INSR,A TXN1,GABRG2,UNC13C,NRXN3,NSG1,CPE ,KCND2,ATP8A2,SLC24A3,GRIA4,CNIH3 ,RELN,VPS13C,STON1-GTF2A1L,SLC4A4,VAV3,KCNE4,KCNS3,F MN2,ERC1,CCDC88A
GO:0007611	learning or memory	0.0007358661 855945334	CLSTN2,TANC1,ITGA8,FYN,GRIN2B,GRI A1,S100B,BRINP1,NRXN1,NTRK2,DGKI, GRM5,ATP8A1,INSR,ATXN1,NRXN3,RELN ,TNR
GO:0048646	anatomical structure formation involved in morphogenesi s	0.0007369885 898676773	NRP1,CDH13,STARD13,SLC40A1,TANC1, ITGA8,PIK3R3,SLC39A12,FMN1,EYA1,A NK2,MEGF11,PRKACB,CDH11,NRXN1,EPH B1,FLT1,EXOC4,RORA,LOXL2,DSCAM,TH SD7A,CNTN1,ENPEP,PRKD1,NRG3,JAM2, GRID2,LRP2,FAT3,MTPN,AKAP13,NRXN3 ,PGM5,SEMA5A,ATP8A2,CALD1,ARHGAP2 4,RELN,CRB1,VAV3,PRKCA
GO:0001508	action potential	0.0007566977 376085893	SLC8A1,GRIK2,ANK2,GRIA1,FGF12,ABC C9,CACNA1C,NTRK2,AKAP6,RYR2,CACNB 2,KCND2,KCNE4
GO:0097061	dendritic spine organization	0.0008540730 839360207	CTNND2,TANC1,FYN,GRIN2B,EPHB1,DNM 3,DOCK10,NLGN1,INSR,RELN
GO:0035418	protein	0.0009612908	ERBB4,CACNG2,NRXN1,DLG2,NBEA,NLGN

	localization to synapse	227087199	1,NRXN3,NSG1,GPC6,RELN
GO:0034762	regulation of transmembrane transport	0.0009714698 492955683	UTRN,SLC8A1,FYN,ANK2,SLC1A2,GRIN2 B,FGF12,CACNG2,PDE4D,NRXN1,ADCYAP 1R1,DPP6,CACNA1C,AKAP6,GRM5,PRKD1 ,NLGN1,RYR2,CACNB2,STXBP4,INSR,CN IH3,RELN
GO:0048589	developmental growth	0.0010860396 345236383	ERBB4,ATRX,MACF1,NRP1,DCLK1,SLC39 A12,DISC1,FMN1,APBA2,SLC1A2,S100B ,PCDH15,ESR1,BBS2,SCAPER,PRKG1,DS CAM,FTO,MAGI2,AKAP6,SEMA6D,MAP2,P RLR,MTPN,VCL,INSR,SEMA5A,ATP8A2,T NR
GO:0007416	synapse assembly	0.0011407536 381933764	ERBB4,CLSTN2,GRIA1,NEGR1,NRXN1,EP HB1,DNM3,PTPRD,NTRK2,DSCAM,NRG3,N LGN1,GRID2,GABRG2,NRXN3
GO:0050890	cognition	0.0013581157 02537152	CLSTN2,TANC1,ITGA8,GPR158,FYN,GRI N2B,GRIA1,S100B,BRINP1,NRXN1,NTRK 2,DGKI,GRM5,ATP8A1,INSR,ATXN1,NRX N3,RELN,TNR
GO:0021954	central nervous system neuron development	0.0018880768 495466223	NRP1,DCLK1,DISC1,GABRB1,CDH11,BRI NP1,EPHB1,NTRK2,MAP2,RAPGEF2
GO:0007612	learning	0.0018998547 462411323	CLSTN2,TANC1,FYN,NRXN1,NTRK2,DGKI ,GRM5,ATP8A1,INSR,ATXN1,NRXN3,REL N,TNR
GO:0006941	striated muscle contraction	0.0019037465 599399633	SLC8A1,ASB3,ANK2,FGF12,PDE4D,ABCC 9,CACNA1C,PRKD1,RYR2,CACNB2,SGCD, ATP8A2,DTNA,KCNE4
GO:0001764	neuron migration	0.0019037465 599399633	APBB2,NRP1,DCLK1,PHACTR1,DISC1,FY N,NTRK2,PRKG1,NRG3,FAT3,RAPGEF2,A STN1,CTNNA2,RELN
GO:0044087	regulation of cellular component biogenesis	0.0020263694 262775403	MACF1,NRP1,CDC42EP3,CLSTN2,CORO2B ,VPS41,SLC39A12,FMN1,PEAK1,NEGR1, FCHSD2,NRXN1,WDPCP,EPHB1,PRKAA2,D NM3,SACS,PTPRD,NTRK2,LDB2,PRKD1,N LGN1,GRID2,FER,MAP2,PTPRA,MTPN,PD E4DIP,VCL,ATAT1,RAPGEF2,CLIP1,ARH GAP24,APC,PRKCA,CCDC88A
GO:1902414	protein localization to cell junction	0.0024105378 29448266	ERBB4,CACNG2,NRXN1,DLG2,NBEA,NLGN 1,VCL,NRXN3,NSG1,GPC6,RELN
GO:0051056	regulation of small GTPase mediated signal transduction	0.0028124402 301346603	NRP1,ABL2,STARD13,RALGPS1,ARHGAP4 2,ARHGAP12,ADCYAP1R1,MYO9A,DGKI,M APRE2,SRGAP3,AKAP13,RALGAPA1,ARHG AP24,DOCK3,CHN1,RELN,VAV3
GO:0106027	neuron projection organization	0.0028736246 809353536	CTNND2,TANC1,FYN,GRIN2B,EPHB1,DNM 3,DOCK10,NLGN1,INSR,RELN
GO:0086003	cardiac muscle cell contraction	0.0032809366 43087311	ANK2,FGF12,PDE4D,ABCC9,CACNA1C,RY R2,CACNB2,SGCD,KCNE4

GO:0060560	developmental growth involved in morphogenesis	0.0033289893 908000612	MACF1,NRP1,DCLK1,SLC39A12,DISC1,F MN1,S100B,ESR1,PRKG1,DSCAM,MAGI2, SEMA6D,MAP2,VCL,SEMA5A,TNR
GO:0099072	regulation of postsynaptic membrane neurotransmitter receptor levels	0.0035163118 28269161	ERBB4,CACNG2,GSG1L,DNM3,NBEA,SYNE 1,STXBP4,NRXN3,NSG1,GPC6
GO:0048583	regulation of response to stimulus	0.0035272001 44333425	ERBB4,ADAMTS18,MACF1,CTNND2,NRP1, CDH13,ABL2,ANKRD6,LDLRAD4,STARD13 ,GRIK2,IGSF11,NCAM1,ITGA1,CORO2B, ITGA8,DISC1,RALGPS1,ARHGAP42,EYA1 ,GPR158,NDRG2,FYN,GRIN2B,CACNG2,S 100B,ESR1,ARHGAP12,PDE4D,PRKACB,L AMA1,NRXN1,NTRK3,CNKSR2,ADCYAP1R1 ,EPHB1,ZDHHC17,PRKAA2,BBS2,DPF3,F LT1,RORA,PTPRD,MYO9A,NTRK2,PRKG1, DSCAM,DGKI,MAGI2,AKAP6,IQCJ-SCHIP1,RNF152,GRM5,PRKD1,NLGN1,GR ID2,LRP2,SEMA6D,SYNE1,FER,FBXL17, SUSD4,PRLR,MTPN,MAPRE2,RIC8B,SEZ6 L,ATAT1,RBMS3,RAPGEF2,ZMYND11,INS R,RGS6,SRGAP3,AKAP13,RALGAPA1,SEM A5A,ARHGAP24,CNIH3,DOCK3,CTNNA2,A PC,GPC6,CHN1,RELN,VPS13C,ROR1,TNR ,VAV3,PRKCA,INPP5A,FMN2,AGO3,ALPK 2,CCDC88A
GO:0031345	negative regulation of cell projection organization	0.0036073457 029294656	NRP1,FYN,GRIN2B,NRXN1,DNM3,NLGN1, PTPRG,SEMA6D,MAP2,FAT3,RAPGEF2,SE MA5A,ARHGAP24,TNR
GO:0098742	cell-cell adhesion via plasma-membrane adhesion molecules	0.0036150219 22246196	CDH13,PCDH7,LRRC4C,CADM2,HMCN1,IG SF11,CLSTN2,PCDH15,CDH11,NRXN1,PT PRD,DSCAM,NLGN1,GRID2,FAT3,PCDH9, CRB1
GO:0030900	forebrain development	0.0045267075 79466748	ERBB4,ATRX,NRP1,DCLK1,PHACTR1,DIS C1,FYN,SLC1A2,GRIA1,TOX,BBS2,NTRK 2,PRKG1,NRG3,LRP2,PCDH9,ATAT1,RAP GEF2,SEMA5A,RELN,TNR
GO:0044093	positive regulation of molecular function	0.0050669440 0342444	NRP1,ABL2,SLCO3A1,ITGA1,EVI5,ARHG AP42,ASAP1,FYN,ANK2,GRIN2B,ESR1,N RXN1,NTRK3,BCL2L13,CACNA1C,FLT1,C DC14B,MYO9A,MAGI2,AKAP6,DOCK10,GR M5,PRKD1,FER,RYR2,PRLR,CACNB2,MTP N,MAPRE2,RAPGEF2,INSR,RGS6,RALGAP A1,CHN1,RELN,ROR1,ERC1,CCDC88A
GO:0051234	establishment of localization	0.0056003587 69908067	ERBB4,KCNMA1,MACF1,TRIM23,NRP1,CD H13,ABL2,UTRN,SLC8A1,SLC2A13,SIAH 3,TBC1D5,SLC40A1,SLCO3A1,PIK3C3,D CLK1,SLC9C1,GRIK2,NKAIN3,CORO2B,E

			VI5,ITGA8,VPS41,GRIK4,GABRG1,SLC39A12,SLC35F1,GPR158,GABRB1,TMEM241,APBA2,FYN,ANK2,SLC1A2,CADPS,GRIN2B,GRIA1,FGF12,CACNG2,ARHGAP12,KCNN3,ABCB5,MEGF11,PDE4D,ERC2,FCHSD2,ITPR2,NRXN1,WDPCP,RAPGEF4,ADCYAP1R1,DPP6,GRID1,ZDHHC17,ABCC9,GSG1L,CACNA1C,DNM3,BBS2,EXOC4,DLG2,SCFD2,NTRK2,GRIK1,PRKG1,DGKI,MAGI2,AKAP6,CNTN1,GRM5,PRKD1,ATP8A1,NLGN1,MICAL3,GRID2,LRP2,SYNE1,FER,MON2,RYR2,MAP2,PRLR,GRIK3,CACNB2,STXBP4,ESYT2,INSR,IMMP2L,ATXN1,GABRG2,UNC13C,NRXN3,NSG1,CPE,KCND2,ATP8A2,SLC24A3,GRIA4,CNIH3,APC,PARD3B,RELN,VPS13C,STON1-GTF2A1L,SLC4A4,VAV3,KCNE4,KCNS3,FMN2,ERC1,CCDC88A
GO:0051960	regulation of nervous system development	0.006653007303845113	*MACF1,NRP1,CLSTN2,DISC1,BRINP1,NRXN1,EPHB1,PTPRD,NTRK2,DSCAM,GRM5,NLGN1,JAM2,GRID2,LRP2,SEMA6D,MAP2,VCAN,RAPGEF2,SEMA5A,RELN,TNR*
GO:0050806	positive regulation of synaptic transmission	0.007362975679677428	*GRIK2,IGSF11,CLSTN2,GPR158,GRIN2B,GRIA1,CACNG2,NRXN1,NTRK2,NLGN1,NSG1,RELN,TNR*
GO:0007169	transmembrane receptor protein tyrosine kinase signaling pathway	0.0074221595558066475	*ERBB4,NRP1,CDH13,ITGA1,PIK3R3,FYN,NRXN1,NTRK3,EPHB1,ZDHHC17,FLT1,NTRK2,PRKD1,NRG3,PTPRG,FER,PRLR,PTPRA,STXBP4,RAPGEF2,INSR,DOCK3,APC,CHN1,ROR1,CCDC88A*
GO:0007274	neuromuscular synaptic transmission	0.007579551808772913	*ERC2,FCHSD2,NRXN1,NLGN1,DTNA,ERC1*
GO:0009888	tissue development	0.00794862696151652	*ERBB4,ATRX,NRP1,NFIA,SLC8A1,LDLRAD4,STARD13,SLC40A1,NCAM1,ITGA8,PBX1,SLC39A12,FMN1,EYA1,TOX,PCDH15,ESR1,ARHGAP12,PDE4D,PRKACB,LAMA1,WDPCP,EPHB1,GREB1L,BBS2,EXOC4,MYO9A,LOXL2,SOX5,PRKG1,FTO,MAGI2,NELL1,AKAP6,LDB2,LRP2,SEMA6D,SYNE1,FER,RYR2,FBXL17,PRLR,MTPN,SOX6,SGCD,VCL,RAPGEF2,INSR,AKAP13,PGM5,SEMA5A,SLC24A3,ARHGAP24,APC,TRPS1,KAZN,ALPK2*
GO:0009887	animal organ morphogenesis	0.008713234479217957	*ERBB4,NRP1,MMP16,SLC40A1,ITGA8,PBX1,FMN1,EYA1,PCDH15,ESR1,MEGF11,LRIG1,LAMA1,WDPCP,EPHB1,GREB1L,ABCC9,BBS2,ASXL3,EXOC4,FOXN3,NTRK2,SOX5,DSCAM,NRG3,LRP2,RYR2,FAT3,SOX6,INSR,CPE,ATP8A2,CTNNA2,APC,CRB1,ALPK2*
GO:0051897	positive regulation of phosphatidyl	0.008872956385558692	*ERBB4,NRXN1,NTRK3,FLT1,NTRK2,PRKD1,FER,INSR,SEMA5A,RELN,ROR1,VAV3,CCDC88A*

	inositol 3-kinase/protein kinase B signal transduction		
GO:0150115	cell-substrate junction organization	0.0089718959 32374161	MACF1,NRP1,CORO2B,FMN1,PEAK1,CDH11,WDPCP,PTPRA,MAPRE2,VCL
GO:0010880	regulation of release of sequestered calcium ion into cytosol by sarcoplasmic reticulum	0.0094343537 6868892	SLC8A1,ANK2,PDE4D,CACNA1C,AKAP6,RYR2
GO:0043087	regulation of GTPase activity	0.0103141741 2266019	EVI5,ARHGAP42,ASAP1,NTRK3,MYO9A,NTRK2,PRKG1,DOCK10,MAPRE2,RAPGEF2,RGS6,RALGAPA1,CHN1,VAV3
GO:0003018	vascular process in circulatory system	0.0104667469 27811797	KCNMA1,SLC8A1,SLC2A13,SLCO3A1,ITGA1,ARHGAP42,SLC1A2,DOCK4,ABCC9,BBS2,PRKG1,ATP8A1,LRP2,INSR,SLC24A3,SLC4A4
GO:0051493	regulation of cytoskeleton organization	0.0110736247 51509614	NRP1,ABL2,CDC42EP3,CORO2B,SLC39A12,FMN1,FCHSD2,PRKAA2,IQCJ-SCHIP1,PRKD1,FER,MAP2,MTPN,MAPRE2,PDE4DIP,MPDZ,ATAT1,AKAP13,CLIP1,SEMA5A,CTNNA2,APC,CCDC88A
GO:0016043	cellular component organization	0.0114997644 49925105	ERBB4,KCNMA1,APBB2,ATRX,ADAMTS18,MACF1,CTNND2,MITF,RTN1,NRP1,TEAD1,NFIA,FRY,CDH13,ABL2,PHACTR3,EML1,RERG,TBC1D5,FRMD5,STARD13,MMP16,LRRC4C,PDZRN3,PIK3C3,DCLK1,CDC42EP3,HMCN1,NCAM1,ITGA1,CLSTN2,KDM4B,TANC1,CORO2B,TTLL11,ITGA8,VPS41,TCF4,FAM171A1,PHACTR1,SLC39A12,DISC1,FMN1,PEAK1,EYA1,ADAMTS19,GPR158,ASAP1,FYN,ANK2,SLC1A2,CSMD3,LRBA,GRIN2B,GRIA1,NEGR1,DGKB,CACNG2,S100B,TOX,PCDH15,ESR1,ARHGAP12,ERC2,PRKACB,FCHSD2,LAMA1,CDH11,SETBP1,CDS2,MAST4,NRXN1,NTRK3,WDPCP,MAGI1,CNKSR2,EPHB1,CTTNBP2,GRID1,ZDHHC17,GSG1L,PRKAA2,CCSER2,DNM3,BBS2,DPF3,EXOC4,SACS,PTPRD,CDC14B,TLN2,MYO9A,NTRK2,LOXL2,PRKG1,DSCAM,THSD7A,NBEA,NCAM2,MAGI2,AKAP6,IQCJ-SCHIP1,CNTN1,DOCK10,GRM5,PRKD1,NRG3,ATP8A1,NLGN1,PTPRG,MICAL3,GRID2,LRP2,SEMA6D,SYNE1,FER,MAP2,PRLR,PTPRA,FAT3,CACNB2,MED15,MTPN,ESYT2,MAPRE2,PDE4DIP,MPDZ,VCL,SEZ6L,ATAT1,RAPGEF2,ZMYND11,INSR,AKAP13,IMMP2L,CHCHD6,GABRG2,UNC13C,NRXN3,PGM5,NSG1,CLIP1,KCND2,SEMA5A,AT

			P8A2,CALD1,ARHGAP24,CTNNA2,APC,PARD3B,CHN1,RELN,VPS13C,ROR1,TNR,CRB1,VAV3,PRKCA,KMT2C,KCNS3,FMN2,ERC1,AGO3,CCDC88A
GO:0048041	focal adhesion assembly	0.01333537231689404	MACF1,NRP1,CORO2B,FMN1,PEAK1,CDH11,WDPCP,PTPRA,VCL
GO:0065009	regulation of molecular function	0.013426825268222727	NRP1,ABL2,UTRN,SLC8A1,SLCO3A1,ITGA1,EVI5,PBX1,DISC1,ARHGAP42,ASAP1,FYN,ANK2,GRIN2B,FGF12,CACNG2,ESR1,NRXN1,NTRK3,BCL2L13,CACNA1C,FLT1,CDC14B,MYO9A,NTRK2,PRKG1,MAGI2,AKAP6,DOCK10,GRM5,LDB2,PRKD1,NLGN1,FER,RYR2,MAP2,PRLR,CACNB2,MTPN,MAPRE2,RAPGEF2,INSR,RGS6,RALGAPA1,CNIH3,APC,CHN1,RELN,ROR1,VAV3,ERC1,CCDC88A
GO:0051345	positive regulation of hydrolase activity	0.01431792637155896	ABL2,ITGA1,EVI5,ARHGAP42,ASAP1,FYN,GRIN2B,ESR1,NTRK3,BCL2L13,FLT1,MYO9A,MAGI2,DOCK10,MAPRE2,RAPGEF2,RGS6,RALGAPA1,CHN1
GO:0150104	transport across blood-brain barrier	0.016173925275929583	SLC2A13,SLCO3A1,SLC1A2,ABCC9,ATP8A1,LRP2,INSR,SLC24A3,SLC4A4
GO:0010232	vascular transport	0.016173925275929583	SLC2A13,SLCO3A1,SLC1A2,ABCC9,ATP8A1,LRP2,INSR,SLC24A3,SLC4A4
GO:0007411	axon guidance	0.01628389387651497	APBB2,NRP1,NCAM1,FYN,NRXN1,EPHB1,PTPRD,DSCAM,CNTN1,SEMA6D,NRXN3,SEMA5A,CHN1,RELN,TNR
GO:0097485	neuron projection guidance	0.01628389387651497	APBB2,NRP1,NCAM1,FYN,NRXN1,EPHB1,PTPRD,DSCAM,CNTN1,SEMA6D,NRXN3,SEMA5A,CHN1,RELN,TNR
GO:0060048	cardiac muscle contraction	0.01646382231234687	SLC8A1,ASB3,ANK2,FGF12,PDE4D,ABCC9,CACNA1C,RYR2,CACNB2,SGCD,KCNE4
GO:0140058	neuron projection arborization	0.017315071633217655	MACF1,NRP1,PHACTR1,MYO9A,NLGN1,LRP2
GO:0050877	nervous system process	0.01878243709886259	HMCN1,GRIK2,IGSF11,CLSTN2,TANC1,ITGA8,DISC1,EYA1,GPR158,FYN,GRIN2B,GRIA1,FGF12,CACNG2,S100B,PCDH15,LRIG1,BRINP1,NRXN1,EPHB1,BBS2,MYO9A,NTRK2,DGKI,GRM5,PRKD1,ATP8A1,NLGN1,OR9Q1,JAM2,GRID2,LRP2,SYNE1,CACNB2,INSR,ATXN1,NRXN3,KCND2,ATP8A2,LHFPL3,CTNNA2,RELN,ROR1,TNR,CRB1
GO:0098815	modulation of excitatory postsynaptic potential	0.01987412464232329512	GRIK2,IGSF11,GRIN2B,NRXN1,NLGN1,SYNE1,RELN
GO:0150116	regulation of cell-substrate junction	0.020026168688705161	MACF1,NRP1,FMN1,PEAK1,WDPCP,PTPRA,MAPRE2,VCL

	organization		
GO:2000311	regulation of AMPA receptor activity	0.0227586748 03196273	*CACNG2,NRXN1,NLGN1,CNIH3,RELN*
GO:0060074	synapse maturation	0.0250440713 69971114	*NFIA,DISC1,NRXN1,NLGN1,SEZ6L,RELN*
GO:0014808	release of sequestered calcium ion into cytosol by sarcoplasmic reticulum	0.0250440713 69971114	*SLC8A1,ANK2,PDE4D,CACNA1C,AKAP6,R YR2*
GO:0090257	regulation of muscle system process	0.0251404338 9763358	*SLC8A1,ASB3,ARHGAP42,ANK2,PDE4D,D OCK4,CACNA1C,PPP1R12B,PRKG1,AKAP6 ,PRKD1,RYR2,MTPN,PRKCA*
GO:0031644	regulation of nervous system process	0.0260384237 3837887	*GRIK2,IGSF11,GRIN2B,FGF12,NRXN1,N LGN1,JAM2,SYNE1,RELN,TNR*
GO:0043547	positive regulation of GTPase activity	0.0266720518 93072746	*EVI5,ARHGAP42,ASAP1,NTRK3,MYO9A,D OCK10,MAPRE2,RAPGEF2,RGS6,RALGAPA 1,CHN1*
GO:0051962	positive regulation of nervous system development	0.0267577827 3801192	*MACF1,NRP1,CLSTN2,DISC1,NRXN1,EPH B1,PTPRD,NTRK2,DSCAM,GRM5,NLGN1,G RID2,LRP2,VCAN,SEMA5A,RELN*
GO:0035295	tube development	0.0277265700 32468895	*ATRX,NRP1,NFIA,CDH13,STARD13,PBX1 ,PIK3R3,SLC39A12,FMN1,EYA1,ESR1,P RKACB,LAMA1,NRXN1,WDPCP,EPHB1,GRE B1L,FLT1,SCAPER,RORA,NTRK2,LOXL2, THSD7A,ENPEP,PRKD1,LRP2,FER,RYR2, SGCD,RAPGEF2,NRXN3,SEMA5A,CALD1,A RHGAP24,VAV3,PRKCA*
GO:0035239	tube morphogenesi s	0.0277987200 95875765	*NRP1,CDH13,STARD13,PBX1,PIK3R3,SL C39A12,FMN1,EYA1,ESR1,PRKACB,LAMA 1,NRXN1,EPHB1,GREB1L,FLT1,RORA,NT RK2,LOXL2,THSD7A,ENPEP,PRKD1,LRP2 ,RYR2,SGCD,RAPGEF2,NRXN3,SEMA5A,C ALD1,ARHGAP24,VAV3,PRKCA*
GO:0043491	phosphatidyl inositol 3-kinase/prote in kinase B signal transduction	0.0279171730 64315185	*ERBB4,PIK3R3,NRXN1,NTRK3,FLT1,NTR K2,MAGI2,PRKD1,LRP2,FER,INSR,SEMA 5A,RELN,ROR1,VAV3,CCDC88A*
GO:0048514	blood vessel morphogenesi s	0.0288310746 1447525	*NRP1,CDH13,STARD13,PIK3R3,SLC39A1 2,EYA1,LAMA1,NRXN1,EPHB1,FLT1,ROR A,NTRK2,LOXL2,THSD7A,ENPEP,PRKD1, LRP2,SGCD,RAPGEF2,NRXN3,SEMA5A,CA LD1,ARHGAP24,VAV3,PRKCA*
GO:1903514	release of sequestered	0.0298388371 1684524	*SLC8A1,ANK2,PDE4D,CACNA1C,AKAP6,R YR2*

	calcium ion into cytosol by endoplasmic reticulum		
GO:0048588	developmental cell growth	0.0337296660 18701164	*MACF1,NRP1,DCLK1,SLC39A12,DISC1,S 100B,PRKG1,DSCAM,AKAP6,SEMA6D,MAP 2,VCL,SEMA5A,TNR*
GO:0001654	eye development	0.0340567615 5144981	*ADAMTS18,MITF,NRP1,NFIA,DCLK1,PBX 1,ABCB5,MEGF11,LAMA1,WDPCP,EPHB1, CACNA1C,FLT1,SCAPER,NTRK2,DSCAM,F AT3,ATP8A2,CRB1*
GO:0043954	cellular component maintenance	0.0340824639 0317018	*TANC1,FYN,GRIN2B,ERC2,NRXN1,NLGN1 ,INSR,ERC1*
GO:0051968	positive regulation of synaptic transmission , glutamatergi c	0.0353485396 7540784	*GRIN2B,CACNG2,NRXN1,NLGN1,RELN,TN R*
GO:0007044	cell- substrate junction assembly	0.0362486112 1395607	*MACF1,NRP1,CORO2B,FMN1,PEAK1,CDH1 1,WDPCP,PTPRA,VCL*
GO:0007160	cell-matrix adhesion	0.0371193390 3626974	*MACF1,NRP1,CDH13,UTRN,ITGA1,CORO2 B,ITGA8,DISC1,FMN1,PEAK1,CDH11,WD PCP,PTPRA,VCL*
GO:0071840	cellular component organization or biogenesis	0.0373055162 18590844	*ERBB4,KCNMA1,APBB2,ATRX,ADAMTS18, MACF1,CTNND2,MITF,RTN1,NRP1,TEAD1 ,NFIA,FRY,CDH13,ABL2,PHACTR3,EML1 ,RERG,TBC1D5,FRMD5,STARD13,MMP16, LRRC4C,PDZRN3,PIK3C3,DCLK1,CDC42E P3,HMCN1,NCAM1,ITGA1,CLSTN2,KDM4B ,TANC1,CORO2B,TTLL11,ITGA8,VPS41, TCF4,FAM171A1,PHACTR1,SLC39A12,DI SC1,FMN1,PEAK1,EYA1,ADAMTS19,GPR1 58,ASAP1,FYN,ANK2,SLC1A2,CSMD3,LR BA,GRIN2B,GRIA1,NEGR1,DGKB,CACNG2 ,S100B,TOX,PCDH15,ESR1,ARHGAP12,E RC2,PRKACB,FCHSD2,LAMA1,CDH11,SET BP1,CDS2,MAST4,NRXN1,NTRK3,WDPCP, MAGI1,CNKSR2,EPHB1,CTTNBP2,GRID1, ZDHHC17,GSG1L,PRKAA2,CCSER2,DNM3, BBS2,DPF3,EXOC4,SACS,PTPRD,CDC14B ,TLN2,MYO9A,NTRK2,LOXL2,PRKG1,DSC AM,THSD7A,NBEA,NCAM2,MAGI2,AKAP6, IQCJ- SCHIP1,CNTN1,DOCK10,GRM5,LDB2,PRK D1,NRG3,ATP8A1,NLGN1,PTPRG,MICAL3 ,GRID2,LRP2,SEMA6D,SYNE1,FER,MAP2 ,PRLR,PTPRA,FAT3,CACNB2,MED15,MTP N,ESYT2,MAPRE2,PDE4DIP,MPDZ,VCL,S EZ6L,ATAT1,RAPGEF2,ZMYND11,INSR,A KAP13,IMMP2L,CHCHD6,GABRG2,UNC13C ,NRXN3,PGM5,NSG1,CLIP1,KCND2,SEMA 5A,ATP8A2,CALD1,ARHGAP24,CTNNA2,A*

			PC,PARD3B,CHN1,RELN,VPS13C,ROR1,T NR,CRB1,VAV3,PRKCA,KMT2C,KCNS3,FM N2,ERC1,AGO3,CCDC88A
GO:0001952	regulation of cell-matrix adhesion	0.0377587948 7905421	*MACF1,NRP1,CDH13,UTRN,DISC1,FMN1, PEAK1,WDPCP,PTPRA,VCL*
GO:0030036	actin cytoskeleton organization	0.0380134231 50302275	*NRP1,ABL2,PHACTR3,FRMD5,STARD13,C DC42EP3,HMCN1,CORO2B,FAM171A1,PHA CTR1,FMN1,PCDH15,ARHGAP12,FCHSD2, PRKG1,THSD7A,PRKD1,MICAL3,FER,MTP N,AKAP13,PGM5,SEMA5A,CALD1,CTNNA2 ,FMN2,CCDC88A*
GO:0032879	regulation of localization	0.0382484144 7646923	*ERBB4,NRP1,CDH13,ABL2,UTRN,SLC8A1 ,SIAH3,TBC1D5,DCLK1,NKAIN3,CORO2B ,GPR158,FYN,ANK2,SLC1A2,CADPS,GRI N2B,FGF12,CACNG2,PDE4D,ERC2,ITPR2 ,NRXN1,WDPCP,RAPGEF4,ADCYAP1R1,DP P6,GSG1L,CACNA1C,PRKAA2,DNM3,PRKG 1,FTO,NBEA,MAGI2,AKAP6,CNTN1,GRM5 ,PRKD1,ATP8A1,NLGN1,SYNE1,FER,RYR 2,MAP2,CACNB2,STXBP4,VCL,INSR,ATP 8A2,CNIH3,APC,GPC6,RELN,CCDC88A*
GO:0150063	visual system development	0.0390686846 1987302	*ADAMTS18,MITF,NRP1,NFIA,DCLK1,PBX 1,ABCB5,MEGF11,LAMA1,WDPCP,EPHB1, CACNA1C,FLT1,SCAPER,NTRK2,DSCAM,F AT3,ATP8A2,CRB1*
GO:0090066	regulation of anatomical structure size	0.0399953410 80731855	*KCNMA1,MACF1,NRP1,SLC8A1,CDC42EP3 ,ITGA1,DISC1,FMN1,ARHGAP42,FCHSD2 ,DOCK4,BBS2,PRKG1,DSCAM,PRKD1,SEM A6D,FER,MAP2,MTPN,SEMA5A,TNR,VAV3*
GO:0040007	growth	0.0463267601 52248035	*ERBB4,ATRX,MACF1,NRP1,TEAD1,RERG, DCLK1,SLC39A12,DISC1,FMN1,APBA2,S LC1A2,S100B,PCDH15,ESR1,BBS2,SCAP ER,PRKG1,DSCAM,FTO,MAGI2,AKAP6,NR G3,SEMA6D,MAP2,PRLR,MTPN,VCL,INSR ,SEMA5A,ATP8A2,TNR*
GO:0048675	axon extension	0.0467706711 95971766	*MACF1,NRP1,DCLK1,DISC1,DSCAM,SEMA 6D,MAP2,VCL,SEMA5A,TNR*
GO:0048880	sensory system development	0.0478303470 5883865	*ADAMTS18,MITF,NRP1,NFIA,DCLK1,PBX 1,ABCB5,MEGF11,LAMA1,WDPCP,EPHB1, CACNA1C,FLT1,SCAPER,NTRK2,DSCAM,F AT3,ATP8A2,CRB1*
GO:1990138	neuron projection extension	0.0492626124 5446397	*MACF1,NRP1,DCLK1,SLC39A12,DISC1,S 100B,DSCAM,SEMA6D,MAP2,VCL,SEMA5A ,TNR*

Table S5. Overlapping groups of rDNA-contacting gene in differentiating K562 cells are co-expressed with 312 different long non-coding RNAs.

Term	Overlap	Adjusted P-value	Genes
PRICKLE2-AS3	40/100	3.0893930894 723625E-8	*MACF1;CHD9;KMT2C;PRICKLE2;ZBTB20;RGPD5; RGPD8;UBR1;CACNA1C;SLC9C1;LPP;PCNX1;ATX N1;AKAP11;ZNF407;EVI5;TEAD1;PRKG1;SVIL;*

			MBD5;MON2;VPS13C;RC3H1;VPS13B;LNPEP;PLEKHA3;STON1-GTF2A1L;EML1;PHC3;MYO9A;HIPK3;FER;NFIA;PEAK1;SLMAP;KCNMA1;CCSER2;WDFY3;BIRC6;KIAA0825
LINC02827	39/100	4.6953817628259136E-8	PATJ;CHD6;GREB1L;RGPD6;RGPD5;RGPD8;FAM214A;TMEM241;MIPOL1;PCNX2;POTED;KHDC4;SLC25A21;APBB2;SAMD12;MARCHF6;ANKRD26;PRMT8;CERS6;AUTS2;ANKRD30B;ANKRD30A;ZNF160;LRBA;DNAH14;MRTFB;TBC1D9;VPS13B;ESR1;EDAR;KIAA1217;TTC6;KCNS3;SP3;TASOR2;NEK10;ZNF236;KIAA0825;SHANK2
LRRC7-AS1	39/100	4.6953817628259136E-8	GABRB1;RTN1;CTNND2;NRXN1;KLHL32;SLC1A2;OTUD7A;FMN2;KIAA0513;GRM5;BRINP1;FUT9;DLGAP1;NCAM1;ERC2;SH3GL2;WASF3;OPCML;ARNT2;DTNA;CADM2;NTRK3;TMOD2;LSAMP;SLC39A12;GRIN2B;SYN2;SNAP91;GABRG1;CNKSR2;TTLL7;DLG2;SYNJ1;APC;ADGRB3;LRRC7;PPP2R2B;ASTN1;RAPGEF4
LINC00472	37/100	3.694256115825165E-7	CYFIP2;NFAT5;PATJ;PRKAA2;CUL5;STXBP4;KMT2C;RGPD6;ZBTB20;RGPD5;RGPD8;EFCAB6;SYNE2;KIAA1328;ERBB4;ZNF407;SLC16A7;THSD7A;RNF152;ANKRD26;MBD5;MON2;ARHGEF12;STPG2;LRBA;DNAH14;VPS13B;LNPEP;PPP2R3A;PHC3;MYO9A;MOB1B;ZNF717;WDFY3;UTRN;KIAA0825;DOCK1
LINC01651	37/100	3.694256115825165E-7	CRB1;GALNT13;PID1;PHLPP1;CTTNBP2;MEGF11;NRXN1;PCDH15;GRIK4;GRIK2;TRIM9;RASSF2;CDH20;DNER;TNR;NCAM1;KIF21B;CSMD3;SOX6;LRRC4C;CACNG2;GRIA4;RFTN2;GRID2;DSCAM;SPHKAP;CADM2;TCF12;LSAMP;LHFPL3;SEZ6L;FCHSD2;ADGRB3;SMOC1;DSCAML1;UNC79;ASTN1
VWC2L-IT1	37/100	3.694256115825165E-7	DGKG;GRIA1;GABRB1;GALNT13;SHC3;RTN1;KCNC1;MEGF11;NRXN1;KLHL32;SLC35F1;GRIK2;GRM5;RASSF2;SNTG1;TNR;LRRC4C;CACNG2;SH3GL2;GPR158;GRIA4;OPCML;CADM2;TMEM132B;TMOD2;FAM219A;LHFPL3;SEZ6L;SNAP91;EPN2;DNM3;SYNJ1;APC;ADGRB3;PPP2R2B;UNC79;ASTN1
GSN-AS1	37/100	3.694256115825165E-7	MACF1;ANKRD36;KMT2C;FMN1;ASAP1;LPP;DOCK10;SRGAP2C;AKAP13;FYCO1;ATXN1;SGCD;ZNF407;ABL2;HMCN1;ERC1;SRGAP2;EVI5;TEAD1;SRGAP2B;KIRREL1;MBD5;RBFOX2;DENND2B;SAMD4A;MYO5A;VPS13B;MITF;LHFPL2;TANC1;FER;PEAK1;SLMAP;CDC42EP3;BIRC6;VCL;TNRC6B
SRGAP3-AS1	36/100	1.0404853611043894E-6	GALNT13;RTN1;CTNND2;NRXN1;KLHL32;GRIK4;NALCN;NPAS3;NKAIN3;CDH20;LRIG1;TNR;DLGAP1;NCAM1;SRGAP3;LRRC4C;WASF3;GRIA4;RFTN2;ARNT2;GRID2;DSCAM;KCND2;CADM2;TMEM132B;NTRK3;TMOD2;TCF12;LSAMP;MAPK8IP1;DNM3;APC;ADGRB3;TBC1D5;PPP2R2B;ASTN1
PRICKLE2-AS1	36/100	1.0404853611043894E-6	RABGAP1;PRICKLE2;CACNA1C;LPP;FYCO1;ATXN1;AKAP11;MPRIP;ABL1;DIP2C;MPDZ;TEAD1;PRKG1;SVIL;STARD13;RBFOX2;NEGR1;AFAP1;SHISAL1;ABCC9;FOXN3;STON1-GTF2A1L;EML1;PJA2;FER;ARHGAP31;APC;PEAK1;SLMAP;KCNMA1;CCSER2;WDFY3;PPP1R12B;PDZRN3;VCL;DDR2
RERG-AS1	36/100	1.0404853611043894E-6	PATJ;TBC1D19;ACSS3;PRKAA2;CUL5;ANKRD36;ZBTB20;KIAA1328;ZNF407;POTED;SLC16A7;TH

			SD7A;RNF152;ANKRD26;MON2;MBD5;STPG2;ANKRD30B;ANKRD30A;DNAH14;VPS13B;KLHL3;PHC3;MYO9A;LRP1B;MOB1B;INPP4B;TBC1D1;ZNF717;RCAN2;ERP27;WDFY3;KIAA0825;DGKI;ANKRD36B;CPEB4
LINC00689	35/100	2.2291696420807726E-6	CRB1;GALNT13;PID1;DGKB;CTTNBP2;MEGF11;LUZP2;PCDH15;GRIK4;GRIK2;TRIM9;BRINP2;CDH20;DNER;PHACTR3;LRIG1;TNR;GSG1L;NCAM1;FYN;KIF21B;CSMD3;SOX6;GRIA4;RFTN2;GRID2;DSCAM;CADM2;TCF12;LSAMP;LHFPL3;FCHSD2;SMOC1;FGF12;DSCAML1
LINC02720	35/100	2.2291696420807726E-6	CUL5;PPM1L;ZBTB20;ITPR2;LDLRAD4;FAM214A;TMEM241;HS6ST3;CDH7;KIAA1328;ERBB4;FAM241A;SLC16A7;APBB2;THSD7A;RNF152;VAV3;UNC13C;MON2;STPG2;LRBA;TBC1D9;GFRA1;SCAMP1;PRLR;ESR1;PBX1;MOB1B;INPP4B;CCNG2;NEK10;ZNF678;KIAA0825;DGKI;CNTNAP5
INHBA-AS1	35/100	2.2291696420807726E-6	NLGN1;RTN1;SHC3;KCNC1;MYT1L;MEGF11;NTM;NRXN1;KLHL32;OTUD7A;GRIK2;GRM5;RASSF2;BRINP1;TNR;CACNG2;ANKS1B;RGS7;GRIA4;OPCML;DSCAM;TMOD2;SYT16;FAM219A;SEZ6L;GRIN2B;SNAP91;DNM3;SYNJ1;APC;ADGRB3;DSCAML1;MAPRE2;UNC79;RAPGEF4
PACRG-AS2	35/100	2.2291696420807726E-6	NFAT5;ACSS3;CUL5;PDE1C;PPM1L;ZBTB20;TRHDE;CDH7;HS6ST3;AP5M1;KIAA1328;TRIM2;ZNF208;SLC16A7;KIF21A;THSD7A;STXBP6;RNF152;UNC13C;FYB2;STPG2;ABCA5;PDE4D;SLC2A13;ADAM32;KLHL3;SCAMP1;MOB1B;INPP4B;TBC1D1;LRFN5;TMEM116;ERP27;DGKI;CNTNAP5
OBI1-AS1	35/100	2.2291696420807726E-6	GALNT13;PHLPP1;HEPACAM;LUZP2;CTNND2;NRXN1;KLHL32;PCDH15;GRIK4;ADCY2;FMN2;NKAIN3;AKAP11;CDH20;FUT9;ANKFY1;NCAM1;KIF21B;SH3GL2;WASF3;RFTN2;NTRK2;ARNT2;KCND2;CADM2;TMOD2;TCF12;LSAMP;CCDC88A;FCHSD2;APC;ADGRB3;PPP2R2B;ARHGEF7;ASB3
SYNE1-AS1	35/100	2.2291696420807726E-6	TBC1D19;DOCK4;PRKAA2;STXBP4;CHD9;GLIS3;PRICKLE2;ZBTB20;SYNE2;PTPRG;TTC28;ARHGAP42;SNX29;BBS9;DIP2C;TEAD1;MBD5;ARHGEF12;SLC2A13;PDE4D;PPP2R3A;CDC42BPA;MYO9A;ARHGAP24;PJA2;HIPK3;FER;ARHGAP31;LATS2;CCSER2;RAPGEF2;WDFY3;UTRN;PTPN4;DOCK1
CXXC4-AS1	35/100	2.2291696420807726E-6	GALNT13;DGKB;CTNND2;NRXN1;PCDH15;GRIK4;GRIK2;NALCN;DPP6;CDH20;DNER;TNR;NCAM1;NCAM2;LRRC4C;CACNG2;GPR158;GRIA4;RFTN2;GRID2;DSCAM;KCND2;CADM2;TMOD2;TCF12;LSAMP;LHFPL3;SEZ6L;DNM3;APC;ADGRB3;CNTN1;DSCAML1;UNC79;ASTN1
TUB-AS1	35/100	2.2291696420807726E-6	NFAT5;TBC1D19;ACSS3;CUL5;PPM1L;ZBTB20;TRHDE;TSPAN33;HS6ST3;CDH7;SNX29;AP5M1;KIAA1328;SLC16A7;KIF21A;THSD7A;SLC16A9;SLC17A1;RNF152;CUBN;STPG2;PDE4D;SLC2A13;WDR72;UNC5D;ARHGAP24;MOB1B;MSRA;PLCXD3;CLCN5;WDFY3;CNTN3;DGKI;CNTNAP5;CPEB4
LINC02552	34/100	7.059176065441783E-6	CRB1;PHLPP1;XYLT1;FMN1;AKAP6;FCRLA;SDCBP;SGCD;UBL3;GNG2;SCFD2;LRRTM4;CHCHD6;GNG7;ZNF106;PRAME;HMCN1;STK32A;DISC1;SOX5;MYEF2;EYA1;MYO10;PCDH7;MOK;MYO5A;MITF;NSG1;CORO2B;IGSF11;NELL1;NRG3;MDGA2;CNIH3

ARHGEF7-IT1	34/100	7.0591760654 41783E-6	*DOCK4;MAML2;PPM1L;CTTNBP2;ZBTB20;AKAP11;SNTG1;SACS;NCAM1;SCAPER;MPDZ;ZNF462;MBD5;TMOD2;TCF12;KIAA0232;MYO9A;PJA2;PYGO1;DNM3;NBEA;MMP16;APC;ADGRB3;PEAK1;NFIB;TTC3;RAPGEF2;WDFY3;FAT3;TCF4;CNTN3;PIK3C3;ARHGEF7*
NMBR-AS1	34/100	7.0591760654 41783E-6	*ATP8A2;MAST4;GRIK1;LRP2;FRY;PRSS23;RERG;SLC7A2;FAM107B;PHF21B;ADAM29;DACH1;ERBB4;SUSD4;MALRD1;PRKACB;EDIL3;PCDH9;NEGR1;SIAH3;SEMA6D;MAGI2;CYBRD1;ESR1;GABRG2;DCDC1;DCLK1;MED13L;CACNB2;FGF14;SLCO3A1;KCNS3;FGF12;FGF10*
LINC01906	33/100	2.2802050469 406323E-5	*PATJ;CLSTN2;ANKRD36;KMT2C;GREB1L;LDLRAD4;SLC9C1;ZNF407;POTED;APBB2;ANKRD26;MON2;MBD5;ANKRD30B;ANKRD30A;LRBA;DNAH14;MUC19;VPS13B;ESR1;PHC3;LRP1B;PBX1;INPP4B;ZNF717;TTC6;TASOR2;ZNF678;BIRC6;ZNF236;KIAA0825;ANKRD36B;SHANK2*
MYO16-AS2	33/100	2.2802050469 406323E-5	*NFAT5;ACSS3;MARCHF1;CUL5;PPM1L;ZBTB20;CDH7;HS6ST3;FGD4;AP5M1;KIAA1328;TRIM2;ZNF208;SLC16A7;KIF21A;DPH6;THSD7A;RNF152;UNC13C;FYB2;STPG2;ABCA5;PDE4D;SLC2A13;ADAM32;SCAMP1;MOB1B;INPP4B;LRFN5;ERP27;DGKI;CNTNAP5;CPEB4*
LINC01741	32/100	5.7281556269 667816E-5	*DGKG;CRB1;GALNT13;PID1;SHC3;DGKB;MEGF11;GRIK4;SLC35F1;GRIK2;TRIM9;DNER;TNR;KIF21B;CSMD3;SOX6;LRRC4C;CACNG2;DLGAP2;GPR158;GRIA4;CA10;DSCAM;TMEM132B;TCF12;LHFPL3;EPN2;FCHSD2;SMOC1;TOX;FGF12;DSCAML1*
LINC00499	32/100	5.7281556269 667816E-5	*GRIA1;RTN1;HEPACAM;CTNND2;NRXN1;KLHL32;SLC1A2;ADCY2;AKAP6;FMN2;CDH20;FUT9;DLGAP1;NCAM1;ERC2;SH3GL2;WASF3;RFTN2;ARNT2;NTRK2;TMOD2;LSAMP;SLC39A12;CORO2B;GABRG1;ETNPPL;TAFA5;NRG3;APC;PPP2R2B;APBA2;RAPGEF4*
SLC8A1-AS1	32/100	5.7281556269 667816E-5	*MARCHF1;CHD9;RNF38;PRICKLE2;ZBTB20;CACNA1C;FRY;LPP;SLC8A1;ATXN1;AKAP11;TSPAN2;PGM5;TEAD1;PRKG1;MBD5;PDE4D;TPM1;LNPEP;FOXN3;STON1-GTF2A1L;EML1;MYO9A;PJA2;HIPK3;FER;NBEA;SLMAP;KCNMA1;CCSER2;WDFY3;PPP1R12B*
ETV5-AS1	32/100	5.7281556269 667816E-5	*NFAT5;ANKRD36;CHD9;KMT2C;FMN1;ASAP1;RGPD8;LYST;MYSM1;SDCBP;SPRED1;ZNF407;ZNF449;ABL2;ZNF106;HMCN1;DISC1;EVI5;ANKRD36C;MBD5;MON2;MYEF2;VPS13C;SETDB2;MYO5A;VPS13B;MITF;FER;WDPCP;BIRC6;ZNF236;ANKRD36B*
CHL1-AS1	32/100	5.7281556269 667816E-5	*SEMA5A;MTPN;NLGN1;PHLPP1;SLC35F1;FMN1;AKAP6;SDCBP;NKAIN3;UBL3;GNG7;ANKFY1;ZNF106;HMCN1;DIP2C;STK32A;SOX5;ARNT2;MYEF2;TMEM178B;MYO10;KAZN;MYO5A;MITF;CORO2B;IGSF11;NELL1;NRG3;TBC1D5;VPS41;CNIH3;CREB5*
PEX5L-AS2	32/100	5.7281556269 667816E-5	*MARCHF1;ANKRD36;CCDC126;GREB1L;EFCAB6;LRP2;NLK;DUX4;RIMS1;KIAA1328;HERC1;ERBB4;ZNF407;PSD3;POTED;HYDIN;ZNF385D;POTEC;ANKS1B;AUTS2;ANKRD30A;DNAH14;SORCS1;DCDC1;ARHGAP32;MYO3B;TTC6;NOS1AP;NEK10;ZNF236;KIAA0825;ANKRD36B*

MRPS30-DT	32/100	5.7281556269667816E-5	*PTPRT;CLSTN2;LDLRAD3;AFF3;FAM214A;TMEM241;RERG;SLC7A2;ERBB4;FAM241A;POTED;APBB2;VAV3;KDM4B;CERS6;SIAH2;LRBA;MRTFB;CYBRD1;TBC1D9;GFRA1;PRLR;ESR1;PBX1;MED13L;NAT1;TTC6;KIF16B;NEK10;BMPR1B;FSIP1;FGF10*
SLC14A2-AS1	32/100	5.7281556269667816E-5	*SLC44A5;NFAT5;TBC1D19;ACSS3;CUL5;PPM1L;ZDHHC21;NYAP2;CDH7;HS6ST3;MTMR7;MIPOL1;KIAA1328;SLC16A7;THSD7A;RNF152;SLC15A5;UNC13C;MBD5;STPG2;FANCM;PDE4D;DNAH14;POU6F2;EBF2;FOXP2;HIPK3;MOB1B;ZNF717;ZNF678;DGKI;CNTNAP5*
LINC01087	31/100	1.474656769250351E-4	*PATJ;ANKRD36;CBWD3;LDLRAD4;FAM214A;MIPOL1;PSD3;POTED;POTEG;ANKRD26;MON2;ADGRV1;ANKRD30B;ANKRD30A;LRBA;DNAH14;MRTFB;TBC1D9;VPS13B;PLXDC2;PRLR;LRP1B;PBX1;INPP4B;TTC6;CCNG2;NEK10;ZNF678;FSIP1;KIAA0825;ANKRD36B*
LINC01069	31/100	1.474656769250351E-4	*NLGN1;PHLPP1;ABCB5;AKAP6;SDCBP;UBL3;SGCD;CHCHD6;MXI1;RGS20;RTTN;PHACTR1;PRAME;ZNF106;HMCN1;STK32A;SOX6;SOX5;BCAS3;MYEF2;MYO10;MICAL3;MYO5A;CABLES1;MITF;NSG1;CORO2B;IGSF11;NRG3;SPIRE1;MDGA2*
LINC01538	31/100	1.474656769250351E-4	*NFAT5;ACSS3;MARCHF1;CUL5;PDE1C;PPM1L;ZBTB20;CDH7;HS6ST3;AP5M1;KIAA1328;TRIM2;ZNF208;SLC16A7;KIF21A;THSD7A;RNF152;UNC13C;STPG2;ABCA5;PDE4D;SLC2A13;ADAM32;SCAMP1;MOB1B;INPP4B;LRFN5;GNAQ;ERP27;DGKI;CNTNAP5*
ZNF32-AS3	31/100	1.474656769250351E-4	*GALNT13;NRXN1;GRIK4;CDH20;LRIG1;TNR;DLGAP1;NCAM1;SRGAP3;NCAM2;LRRC4C;WASF3;GRIA4;RFTN2;GRID2;DSCAM;SPHKAP;KCND2;CADM2;NTRK3;TMOD2;TCF12;LHFPL3;DNM3;FCHSD2;APC;ADGRB3;TTC3;ZMYND11;DSCAML1;ASTN1*
SLC6A1-AS1	31/100	1.474656769250351E-4	*CRB1;PID1;GALNT13;PHLPP1;MEGF11;NRXN1;GRIK4;GRIK2;TRIM9;RASSF2;CDH20;DNER;TNR;NCAM1;WASF3;GRIA4;RFTN2;DSCAM;CADM2;NTRK3;TMOD2;TCF12;LSAMP;LHFPL3;ATP2B2;KLF15;APC;ADGRB3;SMOC1;DSCAML1;ASTN1*
NAV2-AS2	31/100	1.474656769250351E-4	*OCA2;DOCK9;FMN1;ATP10A;AMBRA1;FYCO1;UBL3;SGCD;MPRIP;KIF13A;ABL1;ANKFY1;ZNF106;ERC1;STK32A;DIP2C;TEAD1;ARHGEF11;MYEF2;MYO10;DENND2B;SAMD4A;MYO5A;CABLES1;MITF;NAV2;ITPKB;TANC1;FER;ST6GALNAC3;ITGA9*
TPM1-AS	31/100	1.474656769250351E-4	*PATJ;ANKRD36;KMT2C;GREB1L;RGPD6;ZBTB20;RGPD5;RGPD8;DUX4;LPP;MYSM1;ATXN1;KIAA1328;ZNF407;POTED;POTEC;MBD5;ANKRD30A;DNAH14;RC3H1;VPS13B;PHC3;DCDC1;ZNF717;TTC6;NEK10;BIRC6;ZNF236;KIAA0825;ANKRD36B;TNRC6B*
PGR-AS1	31/100	1.474656769250351E-4	*CLSTN2;SLC40A1;GREB1L;LDLRAD4;EFCAB6;AFF3;FAM214A;GALNT10;TMEM241;RERG;ERBB4;FAM241A;ST8SIA6;APBB2;VAV3;ANKRD26;KDM4B;ANKRD30B;EYA2;SIAH2;LRBA;MRTFB;TBC1D9;GFRA1;PRLR;ESR1;PBX1;DCDC1;INPP4B;NAT1;NEK10*
LINC00862	30/100	3.297501509956885E-4	*LPGAT1;WDR26;CLSTN2;ANKRD36;KMT2C;GREB1L;LDLRAD4;MIPOL1;ODR4;KIAA1328;ZNF407;EYS;ANKRD36C;ANKRD26;ANKRD30B;ANKRD30A;D*

			NAH14;RC3H1;VPS13B;ESR1;PBX1;INPP4B;TTC6;TASOR2;ZNF678;BIRC6;ZNF236;KIAA0825;ANKRD36B;SHANK2
LINC02520	30/100	3.2975015099 56885E-4	DGKG;CRB1;GALNT13;PID1;MEGF11;LAMA1;GRIK4;GRIK2;TRIM9;RELN;DNER;TNR;NCAM1;KIF21B;CSMD3;NCAM2;CACNG2;GPR158;WASF3;GRIA4;DSCAM;CADM2;TCF12;LHFPL3;SEZ6L;HS3ST4;FCHSD2;SMOC1;DSCAML1;UNC79
LINC01602	30/100	3.2975015099 56885E-4	CRB1;GALNT13;PID1;DGKB;GRIK4;GRIK2;UNC80;TRIM9;DNER;PHACTR3;TNR;FYN;KIF21B;CSMD3;SOX6;LRRC4C;CACNG2;GPR158;GRIA4;CA10;DSCAM;TMEM132B;TCF12;LHFPL3;FCHSD2;SMOC1;TOX;MDGA2;FGF12;DSCAML1
LINC02115	30/100	3.2975015099 56885E-4	ACSS3;RAP1GDS1;GRIK1;LRP2;AFF3;FAM107B;CDH7;PAK1;DACH1;ZSWIM6;MALRD1;PRKACB;STK32B;EDIL3;PACRG;SIAH3;CYBRD1;KLHL3;SCAMP1;ESR1;CDYL2;MED13L;MOB1B;CACNB2;TBC1D1;BMP2K;ERP27;BMPR1B;FGF12;FGF10
ANKRD62P1-PARP4P3	30/100	3.2975015099 56885E-4	CRB1;GALNT13;LUZP2;CTNND2;PCDH15;GRIK3;GRIK4;CDH20;LRIG1;DLGAP1;NCAM1;CSMD2;GRIA4;RFTN2;NTRK2;HFM1;DSCAM;SPHKAP;KCND2;CADM2;TCF12;DNM3;FRMD5;FCHSD2;NFIA;SMOC1;ADGRB1;TTC3;ZMYND11;DSCAML1
AGBL4-IT1	30/100	3.2975015099 56885E-4	ANKRD36;STXBP4;KMT2C;DNAH6;RGPD6;RGPD5;EFCAB6;SLC9C1;PTAR1;ZNF407;ANKRD36C;ANKRD26;DNAH11;MON2;MBD5;ANKRD30A;VPS13C;DNAH14;RANBP17;RFX3;RC3H1;VPS13B;PLEKHA3;PHC3;DCDC1;ZNF717;ZNF678;WDPCP;KIAA0825;ANKRD36B
KCNMA1-AS3	30/100	3.2975015099 56885E-4	ANKRD36;KMT2C;GREB1L;ZBTB20;EFCAB6;DUX4;MYSM1;ATXN1;KIAA1328;ZNF407;POTED;POTEC;ANKRD26;MBD5;MON2;ANKRD30A;LRBA;DNAH14;RC3H1;VPS13B;PHC3;DCDC1;ZNF717;TTC6;NEK10;BIRC6;ZNF236;KIAA0825;ANKRD36B;TNRC6B
LRRC8C-DT	30/100	3.2975015099 56885E-4	ZNF573;MACF1;PHLPP1;CHD9;LYST;DOCK10;SRGAP2C;HERC2;HERC1;MAN2A2;SACS;ANKFY1;DIP2B;LRRC8B;DISC1;SRGAP2B;ANKRD28;USP24;SGTB;PRKCB;YLPM1;MYO5A;IGSF11;CCDC88A;SYNJ1;APC;TAOK3;RFX7;WDPCP;TNRC6B
CYP1B1-AS1	30/100	3.2975015099 56885E-4	NOTCH2;CCDC186;SGMS1;SEL1L;RGPD8;LPP;RGPD4;FYCO1;EFR3A;SCAF8;ATXN1;ZNF407;PHACTR2;PDLIM5;SVIL;ZFHX3;IL1R1;BICRAL;DENND4C;LNPEP;PLXDC2;STON1-GTF2A1L;HIPK3;PARD3B;KIAA1217;ROR1;UTRN;VCL;JCAD;FKBP5
PTPRG-AS1	30/100	3.2975015099 56885E-4	IPO11;DOCK4;CUL5;STXBP4;ZBTB20;RGPD8;UBR1;PTPRG;ARHGAP42;SPRED1;ATXN1;AKAP11;ZNF449;BBS9;EVI5;TEAD1;TTC37;MBD5;ARHGEF12;ERBIN;SMAD5;MYO9A;PJA2;MOSMO;FER;TBC1D5;PEAK1;HECW2;RAPGEF2;WDFY3
C3orf67-AS1	30/100	3.2975015099 56885E-4	MTPN;DOCK4;KCNC1;MYT1L;RAP1GDS1;SLC9C1;EHBP1;ATXN1;AKAP11;ANKRD31;TANGO6;ANKRD26;MBD5;SYT1;SGTB;ATRNL1;SLC2A13;CADPS;KIAA1549L;ATP2B2;GRIN2B;SYN2;GABRG2;MOSMO;AGBL4;FER;SYNJ1;PPP2R2C;SCN8A;MBTPS2
FGF10-AS1	30/100	3.2975015099 56885E-4	PTPRT;CLSTN2;MAST4;GRIK1;LRP2;AFF3;PRSS23;FAM214A;RERG;GLI3;SLC7A2;DACH1;ERBB4;FAM241A;PIEZO2;ENPP1;ST8SIA6;MALRD1;PR

			KACB;EDIL3;CYBRD1;TBC1D9;ESR1;DCDC1;MED13L;CACNB2;FGF14;KIF16B;BMPR1B;FGF10
LRP1-AS	30/100	3.297501509956885E-4	NOTCH2;DOCK4;TRIO;CHD9;KMT2C;RGPD8;ANTXR1;AKAP13;PCNX1;ATXN1;AKAP11;HERC1;ZNF407;EVI5;TEAD1;RNF111;CREBBP;DENND4C;EBF1;AFAP1;VPS13B;FOXN3;PLXDC2;FER;PEAK1;WDFY3;BIRC6;ZNF236;FBN1;DDR2
RORA-AS2	30/100	3.297501509956885E-4	PATJ;ANKRD36;KMT2C;GREB1L;RGPD6;ZBTB20;RORA;DUX4;KIAA1328;ZNF407;POTED;POTEG;ANKRD26;MBD5;MON2;ANKRD30A;DNAH14;RC3H1;VPS13B;PHC3;LRP1B;ZNF717;TTC6;NFIA;NEK10;BIRC6;ZNF236;KIAA0825;ANKRD36B;TNRC6B
SFTPD-AS1	30/100	3.297501509956885E-4	NFAT5;ANKRD36;CHD9;RGPD6;ZBTB20;RGPD5;RORA;ZDHHC21;SNX30;SLC9C1;PTAR1;MACROD2;ANKRD36C;DNAH11;MON2;MBD5;WSB1;VPS13C;MTUS1;PLEKHA3;BTBD9;PTPN13;CDC42BPA;PHC3;KCNQ3;GSAP;RAPGEF5;PTPN4;KIAA0825;ANKRD36B
LINC00839	29/100	7.117636586447822E-4	GALNT14;ENPEP;NLGN1;ANKRD33B;MAML2;SLC35F1;SRGAP2C;MXI1;ENPP3;SOX6;DIP2C;SRGAP2;GPR156;SRGAP2B;ANKRD6;KIRREL1;EGLN3;VCAM1;KSR1;KAZN;FRMD4A;SORCS3;IGSF11;MYO3A;SPIRE1;ALPK2;RGL1;DSCAML1;CHST3
LINC00943	29/100	7.117636586447822E-4	RTN1;KCNC1;MYT1L;NRXN1;SLC1A2;GRM3;KIAA0513;GRM5;DLGAP1;ERC2;SH3GL2;ANKS1B;OPCML;RBFOX1;TMEM132B;TMOD2;SLC4A10;SLC39A12;GRIN2B;SYN2;SNAP91;DNM3;SYNJ1;APC;ADGRB3;PPP2R2B;AMPH;SCN2A;RAPGEF4
LINC02556	29/100	7.117636586447822E-4	DGKG;GALNT13;MTMR3;PHLPP1;MEGF11;TUT4;GRIK4;GRIK2;CABIN1;CDH20;TNR;NCAM1;SRGAP3;SCAPER;GRIA4;RFTN2;SPEN;DSCAM;ZBTB16;TCF12;YLPM1;BCR;CCDC88A;FCHSD2;RFX7;SMOC1;ELMO1;FAM193A;DSCAML1
LINC00498	29/100	7.117636586447822E-4	CLSTN2;ANKRD36;KMT2C;GREB1L;ITPR2;LDLRAD4;ERBB4;ZNF407;ST8SIA6;APBB2;ANKS1B;ANKRD26;ANKRD30B;ANKRD30A;LRBA;DNAH14;VPS13B;TBC1D9;ESR1;PBX1;INPP4B;TTC6;TASOR2;ZNF678;BIRC6;ZNF236;KIAA0825;ANKRD36B;SHANK2
LINC00500	29/100	7.117636586447822E-4	SLC24A4;RTN1;PHLPP1;HEPACAM;CTNND2;NRXN1;KLHL32;SLC1A2;AKAP6;ADCY2;FMN2;GRM3;CDH20;GNG7;SH3GL2;WASF3;RFTN2;ARNT2;DTNA;TMOD2;LSAMP;SLC39A12;CORO2B;ETNPPL;IGSF11;TAFA5;NRG3;PPP2R2B;APBA2
LINC01490	29/100	7.117636586447822E-4	NECAB1;PPM1L;PTPRQ;ITPR2;AFF3;HS6ST3;CDH7;SLC16A7;GSE1;THSD7A;RNF152;SLC15A5;VAV3;UNC13C;KDM4B;STPG2;CERS6;AUTS2;ATRNL1;AGL;VPS13B;SCAMP1;DCLK1;MOB1B;INPP4B;BMPR1B;FSIP1;DGKI;MBTPS2
LINC01572	29/100	7.117636586447822E-4	GALNT13;SHC3;PHLPP1;NRXN1;GRIK4;GRIK2;TRIM9;RASSF2;DNER;TNR;NCAM1;KIF21B;LRRC4C;CACNG2;GRIA4;RFTN2;GRID2;DSCAM;CADM2;TMOD2;TCF12;LHFPL3;SEZ6L;CCDC88A;FCHSD2;APC;ADGRB3;DSCAML1;ASTN1
PPP3CB-AS1	29/100	7.117636586447822E-4	STX12;GALNT13;DOCK3;RABGAP1;PHLPP1;ATP8A1;KLHL32;GRIK4;CDH20;HECTD4;PHACTR3;LRIG1;ANKFY1;SRGAP3;SCAPER;RALGPS1;WASF3;ATP9A;RFTN2;NTRK2;NEK4;ARAP2;FAM189A2;YLPM1;TOM1L2;TAOK3;TBC1D5;ZMYND11;ASB3

WDR11-AS1	29/100	7.1176365864 47822E-4	*GALNT13;PHLPP1;HEPACAM;LUZP2;CTNND2;KLH L32;PCDH15;GRIK4;ADCY2;FMN2;IQCJ-SCHIP1;CDH20;NCAM1;SH3GL2;WASF3;JAM2;GR IA4;RFTN2;NTRK2;DTNA;DSCAM;KCND2;CADM2; TMOD2;LSAMP;FRMD5;PPP2R2B;ASB3;APBA2*
FRMPD3-AS1	29/100	7.1176365864 47822E-4	*GALNT13;LUZP2;CTNND2;NRXN1;GRIK4;ADCY2; FMN2;GRIK2;TRIM9;CDH20;DNER;LRIG1;NCAM1 ;LRRC4C;WASF3;GPR158;GRIA4;RFTN2;NTRK2; GRID2;DSCAM;CADM2;NTRK3;TMOD2;TCF12;LSA MP;APC;ADGRB3;ASTN1*
SHANK2-AS2	29/100	7.1176365864 47822E-4	*PATJ;ANKRD36;KMT2C;GREB1L;ZBTB20;LDLRAD 4;DUX4;KIAA1328;ZNF407;POTEC;ANKRD26;MB D5;ANKRD30B;ANKRD30A;LRBA;DNAH14;RC3H1; VPS13B;PHC3;ZNF717;TTC6;TASOR2;ZNF678;B IRC6;ZNF236;KIAA0825;ANKRD36B;SHANK2;TN RC6B*
ADAMTS9-AS2	29/100	7.1176365864 47822E-4	*NRP1;ENPEP;TBC1D19;PRKAA2;STXBP4;ARHGEF 28;CEP120;ZBTB20;PTPRM;RORA;LDB2;SLC8A1 ;TTC28;PTPRG;PKHD1;ARHGAP42;FCHO2;CEP11 2;MBD5;ARHGEF12;INSR;CRIM1;LNPEP;MYO9A; PJA2;HIPK3;WDFY3;ALPK2;UTRN*
LRP4-AS1	29/100	7.1176365864 47822E-4	*GALNT13;SHC3;DOCK3;MEGF11;NRXN1;GRIK4;G RIK2;TRIM9;RASSF2;CDH20;TNR;FYN;NCAM1;L RRC4C;CACNG2;WASF3;GRIA4;RFTN2;DSCAM;CA DM2;TMEM132B;NTRK3;TMOD2;TCF12;LHFPL3;E PN2;ADGRB3;DSCAML1;ASTN1*
FAM198B-AS1	29/100	7.1176365864 47822E-4	*SEL1L;LDLRAD4;AFF3;FAM214A;RERG;PRRC1;F AM241A;ST8SIA6;APBB2;FLNB;TTC37;KDM4B;C ERS6;LRBA;MRTFB;TBC1D9;GFRA1;PRLR;ESR1; PBX1;CDYL2;MED13L;INPP4B;TTC6;KIF16B;CC NG2;NEK10;BMPR1B;FSIP1*
MAPK10-AS1	29/100	7.1176365864 47822E-4	*NFAT5;KMT2C;RGPD6;ZBTB20;RGPD5;ZNF66;RG PD8;LIMD1;LPP;POTEM;POTEH;ZNF407;POTEG; ANKRD36C;ZNF462;ZFHX3;MBD5;MGA;VPS13B;P HC3;SMAD5;IQCM;ZNF717;WDFY3;CCSER1;BIRC 6;UTRN;ANKRD36B;TNRC6B*
WDFY3-AS1	29/100	7.1176365864 47822E-4	*ZNF573;CHD9;KMT2C;ZBTB20;RGPD8;UBR1;RGP D4;PCNX1;ATXN1;AKAP11;HERC1;ZNF407;HECT D4;RNF111;MBD5;MON2;ARHGEF12;LRBA;DENND 4C;VPS13B;PHC3;MYO9A;RC3H2;HIPK3;FER;WD FY3;BIRC6;ZNF236;KIAA0825*
PPP1R12A-AS1	29/100	7.1176365864 47822E-4	*RABGAP1;ROCK1;PPM1L;RNF38;PRICKLE2;CACN A1C;UBR1;LPP;FYCO1;HECTD4;SPOP;TSPAN2;P GM5;SCAPER;TEAD1;SVIL;FBXL17;FOXN3;STON 1-GTF2A1L;EML1;PJA2;TOM1L2;SLMAP;KCNMA1;C CSER2;PPP1R12B;ZMYND11;ASB2;VCL*
THSD4-AS1	29/100	7.1176365864 47822E-4	*PATJ;MARCHF1;ANKRD36;GREB1L;EFCAB6;DUX4 ;MYSM1;KIAA1328;HERC1;ERBB4;ZNF407;PSD3 ;POTED;POTEC;ANKRD26;ANKRD30A;LRBA;DNAH 14;VPS13B;DCDC1;ARHGAP32;ZNF717;MYO3B;T TC6;NOS1AP;NEK10;ZNF236;KIAA0825;ANKRD3 6B*
NKAIN3-IT1	29/100	7.1176365864 47822E-4	*PHLPP1;HEPACAM;LUZP2;CTNND2;NRXN1;KLHL3 2;GRIK4;ADCY2;FMN2;TRIM9;NKAIN3;CDH20;F UT9;NCAM1;WASF3;JAM2;GRIA4;RFTN2;NTRK2; DTNA;KCND2;CADM2;TMOD2;LSAMP;APC;ADGRB3 ;PPP2R2B;APBA2;ASTN1*
TSC22D1-	29/100	7.1176365864	*RERE;HDAC4;NALCN;UNC80;HERC2;AKAP11;HEC*

AS1		47822E-4	*TD4;LRIG1;DLGAP1;NPIPA1;NCAM1;SRGAP3;RALGPS1;ATP9A;MBD5;PTPRN2;CADM2;CADPS;LSAMP;PRKCA;SNAP91;DNM3;SYNJ1;TAOK3;ADGRB3;TBC1D5;MADD;CNTN3;ASTN1*
LINC01546	28/100	0.0015656727001641304	*DGKG;GALNT13;MEGF11;GRIK4;SLC35F1;GRIK2;TRIM9;BRINP2;RASSF2;SNTG1;CDH20;DNER;TNR;NCAM1;LRRC4C;CACNG2;GRIA4;RFTN2;GRID2;DSCAM;TMEM132B;LHFPL3;SEZ6L;EPN2;ADGRB3;SMOC1;DSCAML1;ASTN1*
LINC01344	28/100	0.0015656727001641304	*PATJ;GREB1L;DUX4;FAM214A;MIPOL1;HHAT;ODR4;ERBB4;PSD3;POTED;ST8SIA6;POTEC;ANKRD26;ANKRD30A;DNAH14;COG2;MRTFB;TBC1D9;PRLR;ESR1;DCDC1;LRP1B;NAT1;MYO3B;TTC6;NEK10;ATF6;KIAA0825*
LINC00446	28/100	0.0015656727001641304	*PHLPP1;ABCB5;FMN1;AKAP6;SYNPR;SDCBP;UBL3;SGCD;SCFD2;CHCHD6;RGS20;RTTN;PHACTR1;PRAME;ZNF106;STK32A;SNX8;SOX5;MYEF2;MYO10;MOK;MYO5A;CABLES1;MITF;NSG1;IGSF11;NRG3;RGS12*
LINC01761	28/100	0.0015656727001641304	*CLSTN2;ANKRD36;KMT2C;ITPR2;LDLRAD4;PCNX2;KIAA1328;ZNF407;ANKS1B;ANKRD26;ANKRD30B;ANKRD30A;MGA;DNAH14;VPS13B;ESR1;PBX1;INPP4B;TTC6;TASOR2;ZNF678;BIRC6;UTRN;ZNF236;KIAA0825;ANKRD36B;SHANK2;TNRC6B*
LINC02008	28/100	0.0015656727001641304	*GALNT13;NRXN1;GRIK4;GRIK2;FMN2;NPAS3;TRIM9;CECR2;RASSF2;SNTG1;CDH20;DNER;TNR;NCAM1;CSMD3;CACNG2;GPR158;GRIA4;RFTN2;GRID2;DSCAM;CADM2;TCF12;LHFPL3;ADGRB3;SMOC1;DSCAML1;ASTN1*
LINC02017	28/100	0.0015656727001641304	*GALNT13;RTN1;HEPACAM;LUZP2;CTNND2;KLHL32;PCDH15;GRIK4;ADCY2;FMN2;CDH20;FUT9;NCAM1;CSMD2;SH3GL2;WASF3;RFTN2;NTRK2;KCND2;CADM2;TMOD2;PDE4DIP;ETNPPL;FRMD5;TAFA5;SMOC1;APBA2;ASB3*
LINC02199	28/100	0.0015656727001641304	*PHLPP1;FMN1;SDCBP;UBL3;SCFD2;CHCHD6;GNG7;ABL2;PHACTR1;PRAME;ZNF106;HMCN1;SRGAP2;DISC1;SOX5;ARNT2;MYEF2;MYO10;ST8SIA1;MICAL3;MOK;MYO5A;MITF;NSG1;CORO2B;IGSF11;ITPKB;MDGA2*
LINC02598	28/100	0.0015656727001641304	*CRB1;GALNT13;PHLPP1;LUZP2;CTNND2;PCDH15;GRIK4;ADCY2;GRIK2;IQCJ-SCHIP1;TRIM9;SNTG1;CDH20;NCAM1;KIF21B;CSMD2;GRIA4;RFTN2;NTRK2;GRID2;DSCAM;KCND2;TCF12;LSAMP;LHFPL3;FCHSD2;DSCAML1;APBA2*
LINC02571	28/100	0.0015656727001641304	*PATJ;PDXDC1;GREB1L;AFF3;DUX4;FAM214A;TMEM241;MIPOL1;ERBB4;POTED;POTEC;CERS6;ANKRD30A;LRBA;MRTFB;TBC1D9;GFRA1;TC2N;PRLR;ESR1;PBX1;CDYL2;TTC6;DOP1B;CCNG2;MYO5C;NEK10;FSIP1*
LINC00517	28/100	0.0015656727001641304	*PATJ;ANKRD36;KMT2C;GREB1L;ZBTB20;LPP;POTEM;ATXN1;KIAA1328;POTEH;ZNF407;POTED;POTEG;ANKRD26;MBD5;ANKRD30B;ANKRD30A;DNAH14;VPS13B;PHC3;ZNF717;TTC6;NFIA;UTRN;ZNF236;KIAA0825;ANKRD36B;TNRC6B*
LINC01415	28/100	0.0015656727001641304	*GALNT13;SHC3;NRXN1;GRIK4;GRIK2;TRIM9;RASSF2;SNTG1;DNER;TNR;NCAM1;LRRC4C;CACNG2;GRIA4;RFTN2;GRID2;DSCAM;CADM2;TMOD2;TCF12;LSAMP;FAM219A;LHFPL3;SEZ6L;APC;ADGR*

			B3;TCF4;ASTN1
LINC00836	28/100	0.0015656727001641304	GALNT13;PHLPP1;HEPACAM;LUZP2;CTNND2;KLHL32;PCDH15;GRIK4;ADCY2;FMN2;CDH20;FUT9;NCAM1;WASF3;JAM2;GRIA4;RFTN2;NTRK2;DTNA;CADM2;TMOD2;LSAMP;PDE4DIP;ETNPPL;FRMD5;PPP2R2B;SMOC1;ASB3
SHANK2-AS3	28/100	0.0015656727001641304	ANKRD36;KMT2C;GREB1L;ZBTB20;LDLRAD4;KIAA1328;ZNF407;ANKRD26;MBD5;ANKRD30B;ANKRD30A;LRBA;MGA;DNAH14;RC3H1;VPS13B;PHC3;ZNF717;TTC6;TASOR2;ZNF678;BIRC6;UTRN;ZNF236;KIAA0825;ANKRD36B;SHANK2;TNRC6B
PABPC5-AS1	28/100	0.0015656727001641304	SLC23A2;ATL1;NALCN;UNC80;CTIF;DPP6;GNG2;ZNF704;AKT3;NCAM1;DIP2C;LRRC4C;MPDZ;GPR158;GARNL3;JAZF1;ZNF287;ANKRD26;MYEF2;ANKRD30B;LSAMP;PJA2;PYGO1;DNM3;NBEA;MMP16;ADGRB3;TTC3
MYCBP2-AS1	28/100	0.0015656727001641304	ZNF573;MACF1;SETD2;ROCK1;CHD9;KMT2C;PRDM10;PCNX1;NIPBL;AKAP11;BTAF1;HERC1;RNF111;BPTF;USP24;SPEN;VPS13C;MGA;TRAPPC10;YLPM1;RC3H1;VPS13B;ARID1B;RC3H2;NCOR1;RFX7;BIRC6;TNRC6B
TMEM26-AS1	28/100	0.0015656727001641304	PTPRT;CLSTN2;LDLRAD3;AFF3;FAM214A;RERG;HHAT;FAM241A;POTED;PIEZO2;ST8SIA6;FLNB;KDM4B;LRBA;MRTFB;CYBRD1;TBC1D9;GFRA1;PRLR;ESR1;DCDC1;CDYL2;INPP4B;TTC6;KIF16B;CCNG2;NEK10;BMPR1B
KCND3-AS1	28/100	0.0015656727001641304	PATJ;ANKRD36;KMT2C;GREB1L;ZBTB20;EFCAB6;DUX4;POTEM;KIAA1328;POTEH;ZNF407;POTED;POTEG;POTEC;MBD5;ANKRD30A;DNAH14;VPS13B;PHC3;DCDC1;ZNF717;TTC6;NEK10;UTRN;ZNF236;KIAA0825;ANKRD36B;TNRC6B
CNTN4-AS1	28/100	0.0015656727001641304	APP;STX12;ATP8A1;CPQ;DOCK9;COL14A1;SDC2;PRICKLE2;PTPRM;PTPRG;ABL1;BBS9;SLIT3;STARD13;RBFOX2;ARHGEF12;CNTN6;LAMB1;PJA2;PARD3B;TBC1D5;SLC27A6;CNTN4;UTRN;ZMYND11;DOCK1;JCAD;ITGA9
PRICKLE2-AS2	28/100	0.0015656727001641304	NFAT5;ANKRD36;CHD9;KMT2C;RGPD6;PRICKLE2;ZBTB20;RGPD5;RGPD8;LPP;MYSM1;ATXN1;ZNF407;ANKRD36C;MBD5;MON2;ANKRD30A;VPS13C;RC3H1;VPS13B;PHC3;FER;WDFY3;BIRC6;UTRN;KIAA0825;ANKRD36B;TNRC6B
NR2F2-AS1	28/100	0.0015656727001641304	NRP1;NFAT5;GALNT14;ENPEP;PRKAA2;STXBP4;ARHGEF28;ZBTB20;LDB2;SLC6A3;CNDP2;TTC28;PKHD1;ARHGAP42;SNX29;GRB10;ARSB;MBD5;VCAM1;INSR;CRIM1;PPP2R3A;MYO9A;ARHGAP24;CLCN5;WDFY3;ALPK2;TRABD2B
CLSTN2-AS1	28/100	0.0015656727001641304	CLSTN2;ANKRD36;KMT2C;ITPR2;LDLRAD4;KIAA1328;ZNF407;ANKS1B;ANKRD26;ANKRD30B;ANKRD30A;LRBA;MGA;DNAH14;VPS13B;PHC3;PBX1;INPP4B;TTC6;TASOR2;ZNF678;BIRC6;UTRN;ZNF236;KIAA0825;ANKRD36B;SHANK2;TNRC6B
LINC00305	27/100	0.003311681967244395	ZNF397;ATP8A2;KDM1B;SYCP1;PIGN;DNAH5;PLD5;HTR2C;FHIT;ADAMTSL1;TTR;ZSCAN30;ERBB4;KIF13A;RPRD1A;ZNF385D;PDE6A;TRPM3;OR4C46;NTNG1;WWOX;KCNH5;TRAPPC8;GABRG3;NAT1;TAFA1;GALNTL6
LINC01567	27/100	0.003311681967244395	NFAT5;MARCHF1;CUL5;PPM1L;RGPD6;ZBTB20;RGPD5;CDH7;HS6ST3;AP5M1;KIAA1328;TRIM2;SLC16A7;THSD7A;RNF152;UNC13C;ANKRD36C;MB

			D5;STPG2;PDE4D;ADAM32;PLEKHA3;PIAS2;MOB 1B;ZNF717;DGKI;CNTNAP5
LINC00945	27/100	0.0033116819 67244395	*CRB1;PHLPP1;CTNND2;ILDR2;GRIK4;SLC35F1; AKAP6;DOCK10;TRIM9;RASSF2;FYN;NCAM1;DIS C1;GRIA4;RFTN2;ARNT2;GRID2;DSCAM;ST8SIA 1;TMOD2;TCF12;LSAMP;LHFPL3;CORO2B;IGSF1 1;CCDC88A;APBA2*
LINC01677	27/100	0.0033116819 67244395	*DGKG;CRB1;GALNT13;RTN1;HEPACAM;MEGF11;C TNND2;KLHL32;GRIK4;GRIK2;TRIM9;CDH20;DN ER;PHACTR3;TNR;NCAM1;GRIA4;RFTN2;NTRK2; GRID2;DSCAM;CADM2;LSAMP;ADGRB3;SMOC1;DS CAML1;APBA2*
LINC01945	27/100	0.0033116819 67244395	*SH3KBP1;SEMA3A;AKAP6;PCMTD2;SDCBP;GNG2; GNG7;PRAME;HMCN1;SRGAP2;SOX5;MAP4K4;KIR REL1;EYA1;MYO10;PCDH7;HMGA2;SORCS1;CORO 2B;AIMP1;IGSF11;MOSMO;MMP16;CNTN4;B4GAL T6;FREM1;CNIH3*
LINC01351	27/100	0.0033116819 67244395	*HEPACAM;CTNND2;NRXN1;GRIK4;SLC35F1;FMN2 ;TRIM9;RASSF2;CDH20;DNER;NCAM1;BRINP3;W ASF3;GRIA4;RFTN2;GRID2;DSCAM;CADM2;NTRK 3;TMOD2;LSAMP;LHFPL3;EPN2;ADGRB3;PPP2R2 B;APBA2;ASTN1*
LINC02006	27/100	0.0033116819 67244395	*NFAT5;ACSS3;CUL5;PPM1L;ABCA13;CDH7;HS6S T3;AP5M1;KIAA1328;TRIM2;ZNF208;SLC16A7; KIF21A;THSD7A;SAMD12;RNF152;UNC13C;STPG 2;ABCA5;PDE4D;SCAMP1;MOB1B;INPP4B;TMEM1 16;ERP27;DGKI;CNTNAP5*
LINC02058	27/100	0.0033116819 67244395	*GRIA1;GALNT13;PHLPP1;LUZP2;CTNND2;NRXN1 ;KLHL32;GRIK4;ADCY2;FMN2;RASSF2;CDH20;F UT9;NCAM1;KIF21B;WASF3;GRIA4;RFTN2;NTRK 2;GRID2;DTNA;DSCAM;CADM2;TMOD2;LSAMP;AP C;ADGRB3*
LINC02510	27/100	0.0033116819 67244395	*COL14A1;LPP;NTF3;HMCN2;TSPAN2;EDIL3;ZNF 367;PLXNA4;SPECC1;ANKRD30A;NUBPL;PDE4D; TPM1;TOP3A;FBXO32;LRP1B;TTLL7;FAM135B;C OL4A2;LRRC7;SLMAP;EOGT;ITGA8;ULK2;PPP1R 12B;ASB2;VCL*
LINC00641	27/100	0.0033116819 67244395	*RTN1;DGKB;CTNND2;NRXN1;OTUD7A;FMN2;NALC N;DPP6;FUT9;NCAM1;LRRC4C;SH3GL2;WASF3;C ADM2;TMOD2;LSAMP;ZDHHC17;SNAP91;DNM3;CN KSR2;CCDC88A;SYNJ1;APC;ADGRB3;PPP2R2B;C NTN1;ASTN1*
LINC00564	27/100	0.0033116819 67244395	*PTPRQ;ITPR2;SIPA1L2;AFF3;PRSS23;ALCAM;Z NRF3;ERBB4;ANKRD31;ENPP1;LARGE1;SLC37A2 ;ATRNL1;SIAH2;PXDNL;ERLIN2;PRLR;GABRG2; PARP8;KITLG;CNKSR3;BMPR1B;VSTM2A;FSIP1; PDZRN3;FBXL7;FGF10*
LINC01924	27/100	0.0033116819 67244395	*NFAT5;ACSS3;CUL5;PPM1L;SLC40A1;CDH7;HS6 ST3;SPATA48;AP5M1;KIAA1328;TRIM2;ZNF208 ;SLC16A7;THSD7A;RNF152;UNC13C;FYB2;STPG 2;PDE4D;SCAMP1;MOB1B;INPP4B;TBC1D1;TMEM 116;ERP27;DGKI;CNTNAP5*
LINC01255	27/100	0.0033116819 67244395	*CLSTN2;ANKRD36;KMT2C;ITPR2;LDLRAD4;PCNX 2;KIAA1328;ZNF407;ANKS1B;ANKRD26;ANKRD3 0B;ANKRD30A;LRBA;DNAH14;VPS13B;ESR1;PBX 1;INPP4B;TTC6;TASOR2;BIRC6;UTRN;ZNF236; KIAA0825;ANKRD36B;SHANK2;TNRC6B*
WDFY3-AS2	27/100	0.0033116819 67244395	*NLGN1;CTNND2;KLHL32;GRIK4;ADCY2;FMN2;IQ CJ-*

			SCHIP1;CDH20;NCAM1;SH3GL2;WASF3;JAM2;GRIA4;BBS2;RFTN2;NTRK2;DTNA;CADM2;TMOD2;MAGI2;APC;ADGRB3;PPP2R2B;SPIRE1;CPE;WDFY3;DSCAML1
MAPRE3-AS1	27/100	0.0033116819 67244395	NFAT5;MARCHF1;CUL5;PPM1L;ANKRD36;KMT2C;RGPD6;ZBTB20;RGPD5;SLC9C1;DUX4;KIAA1328;SLC16A7;THSD7A;RNF152;MBD5;STPG2;RC3H1;VPS13B;PHC3;MOB1B;ZNF717;BIRC6;ZNF236;DGKI;ANKRD36B;TNRC6B
RORB-AS1	27/100	0.0033116819 67244395	SLC23A2;ABCD2;RTN1;KCNC1;MYT1L;FRMPD4;ATL1;SLC1A2;RORB;KIAA0513;SV2B;SPOCK1;CTNNA2;PPFIA2;RGS7;RBFOX1;SLC4A10;SYT16;ATP2B2;SYN2;SNAP91;CNKSR2;TAFA4;DLG2;SCN8A;SCN2A;ASTN1
ARHGEF7-AS1	27/100	0.0033116819 67244395	MAML2;PPM1L;ATL1;NRXN1;FRY;NOL4;CTIF;DPP6;NCAM1;DIP2C;MPDZ;WASF3;CADM2;TMOD2;TCF12;EBF1;KIAA0232;PJA2;DNM3;SGSM1;NBEA;APC;ADGRB3;WDFY3;TCF4;TLN2;ARHGEF7
NCAM1-AS1	27/100	0.0033116819 67244395	GALNT13;CTNND2;NRXN1;GRIK4;FMN2;GRIK2;NALCN;TRIM9;DPP6;DNER;NCAM1;LRRC4C;GPR158;GRIA4;RFTN2;GRID2;DSCAM;CADM2;NTRK3;TMOD2;LSAMP;MAPK8IP1;DNM3;ADGRB3;PPP2R2B;UNC79;ASTN1
UST-AS1	27/100	0.0033116819 67244395	ZNF573;MACF1;NFAT5;PPM1L;CHD9;KMT2C;WDR41;RGPD6;ZBTB20;RGPD5;RGPD8;SLC9C1;ZNF407;SLC16A7;SCAPER;EVI5;ZNF462;MBD5;PHC3;PYGO1;MOB1B;FER;PDP2;CCSER2;PTPN4;DGKI;TNRC6B
KAZN-AS1	27/100	0.0033116819 67244395	PATJ;ANKRD36;KMT2C;GREB1L;EFCAB6;DUX4;MYSM1;ERBB4;PSD3;POTED;POTEC;NTNG1;ANKRD30A;LRBA;DNAH14;VPS13B;TC2N;PRLR;DCDC1;ARHGAP32;MYO3B;TTC6;TTC3;NEK10;ZNF236;KIAA0825;ANKRD36B
DAAM2-AS1	27/100	0.0033116819 67244395	PHLPP1;HEPACAM;LUZP2;CTNND2;NRXN1;KLHL32;GRIK4;ADCY2;FMN2;NKAIN3;CDH20;FUT9;NCAM1;WASF3;JAM2;RFTN2;NTRK2;ARNT2;DTNA;CADM2;TMOD2;LSAMP;GABRG1;ETNPPL;APC;ADGRB3;PPP2R2B
ID2-AS1	27/100	0.0033116819 67244395	GALNT13;HEPACAM;LUZP2;CTNND2;NRXN1;KLHL32;GRIK4;ADCY2;FMN2;IQCJ-SCHIP1;CDH20;FUT9;NCAM1;SH3GL2;WASF3;BBS2;RFTN2;NTRK2;DTNA;CADM2;TMOD2;PRKCA;GABRG1;ETNPPL;PTPRD;APC;PPP2R2B
SMAD9-IT1	27/100	0.0033116819 67244395	RABGAP1;ATP8A1;MAML2;ZBTB20;POTEM;AKAP11;POTEH;HECTD4;SCAPER;MPDZ;ZNF462;RIC3;MBD5;TMEM178B;ZBTB16;YLPM1;ZDHHC17;MYO9A;PYGO1;TJP1;NFIA;PEAK1;CCSER2;RAPGEF2;WDFY3;UTRN;ZMYND11
OIP5-AS1	27/100	0.0033116819 67244395	ZNF573;CHD9;IREB2;UBR1;PTAR1;PCNX1;BTAF1;HERC1;TRPM7;RNF111;BPTF;USP8;AQR;PRKCB;VPS13C;MGA;RC3H1;FAM126B;MYO9A;RC3H2;PIAS1;CCDC88A;KANSL1;RFX7;GNAQ;ZNF236;TNRC6B
EDIL3-DT	27/100	0.0033116819 67244395	NRP1;PRICKLE2;MPRIP;CHSY3;DIP2C;EDIL3;GPC6;ARSB;PRKG1;RBFOX2;PDE4D;TPM1;AFAP1;EML1;PTPRD;TTLL7;COL4A2;SLMAP;EOGT;ITGA8;ULK2;CDH13;ROR1;RAPGEF5;PPP1R12B;ASB2;VCL
FRMD6-AS1	27/100	0.0033116819	CHD6;GREB1L;LDLRAD3;DUX4;GLI3;MIPOL1;RP

		67244395	*S6KA5;ZNF407;POTED;ABL2;POTEC;SUPT16H;ANKRD26;FANCM;ANKRD30A;DNAH14;MRTFB;EXOC6B;TBC1D9;MCC;PRLR;ESR1;DCDC1;FRMD6;TTC6;NEK10;ZNF236*
LINC02051	26/100	0.0065133504181173075	*DGKG;GALNT13;SLC24A3;RABGAP1;SLC35F1;GRIK2;SEL1L2;TRIM9;RASSF2;HMCN2;TMEM108;TNR;NCAM1;PLXNA4;GRIA4;SPECC1;DSCAM;TCF12;LHFPL3;EPN2;TTLL7;LRRC7;SMOC1;ITGA8;ASB2;ASTN1*
LINC01739	26/100	0.0065133504181173075	*IGSF3;ABCB5;FMN1;LYST;SDCBP;SGCD;UBL3;SCFD2;CHCHD6;ABL2;RGS20;PHACTR1;PRAME;ZNF106;HMCN1;STK32A;ARHGEF11;MYEF2;MYO10;MOK;MYO5A;CABLES1;MITF;NSG1;PARVB;IGSF11*
LINC01293	26/100	0.0065133504181173075	*IGSF3;ABCB5;FMN1;LYST;SDCBP;SGCD;UBL3;CHCHD6;ABL2;RGS20;PHACTR1;PRAME;ZNF106;HMCN1;SRGAP2;ARHGEF11;BCAS3;MYEF2;MYO10;SETDB2;MOK;MYO5A;CABLES1;MITF;NSG1;IGSF11*
LINC01640	26/100	0.0065133504181173075	*PPM1L;PRICKLE2;NRXN3;CACNA1C;LPP;MED15;FYCO1;INPP5A;KIAA1328;ABL1;PGM5;LARGE1;PRKG1;RALGPS1;MAGI1;ZFHX3;RBFOX2;FOXN3;STON1-GTF2A1L;EML1;PARD3B;ASXL3;SLMAP;KCNMA1;ZNF74;CCSER2*
LINC02151	26/100	0.0065133504181173075	*GALNT13;SHC3;MEGF11;GRIK4;GRIK2;UNC80;DPP6;SNTG1;DNER;TNR;NCAM1;LRRC4C;CACNG2;GPR158;GRIA4;CA10;DSCAM;LHFPL3;SEZ6L;EPN2;SLC8A3;ADGRB3;SMOC1;DSCAML1;UNC79;ASTN1*
LINC02030	26/100	0.0065133504181173075	*SLC24A3;BNC2;LUZP2;CTNND2;PCDH15;ADCY2;KLHL13;CACNA1C;PHF21B;RIMS2;CDH20;LRIG1;NCAM1;RFTN2;KCND2;LRRC49;SHISAL1;UNC5D;TAFA5;GHRH;ADGRB1;PRR16;PPP1R12B;PLCB1;PDZRN3;APBA2*
LINC02024	26/100	0.0065133504181173075	*RYR2;KMT2C;ZBTB20;POTEM;KIAA1328;POTEH;HECTD4;POTEG;POTEB;ZNF462;ZFHX3;EPHA6;POTEB2;POTEB3;ZBTB16;PDE4D;MGA;VPS13B;PHC3;TTC6;NFIA;FAT3;UTRN;DGKI;ANKRD36B;TNRC6B*
LINC02226	26/100	0.0065133504181173075	*NLGN1;PHLPP1;CTNND2;GRIK4;SLC35F1;AKAP6;FMN2;TRIM9;UBL3;GNG7;DNER;FYN;NCAM1;SOX6;RFTN2;ARNT2;MYEF2;ST8SIA1;MAGI2;LSAMP;CORO2B;IGSF11;PPP2R2B;MDGA2;APBA2;ASTN1*
LINC01088	26/100	0.0065133504181173075	*GALNT13;HPSE2;HEPACAM;LUZP2;CTNND2;KLHL32;GRIK4;ADCY2;FMN2;CDH20;FUT9;NCAM1;WASF3;JAM2;RFTN2;NTRK2;DTNA;LSAMP;PDE4DIP;GABRG1;ETNPPL;FRMD5;PPP2R2B;CNTN1;CPE;ASB3*
LINC02764	26/100	0.0065133504181173075	*GALNT13;HEPACAM;LUZP2;CTNND2;KLHL32;GRIK4;ADCY2;FMN2;IQCJ-SCHIP1;CDH20;FUT9;NCAM1;SH3GL2;WASF3;JAM2;RFTN2;NTRK2;PACRG;DTNA;CADM2;TMOD2;TAFA5;NRG3;PPP2R2B;SPIRE1;APBA2*
LINC02157	26/100	0.0065133504181173075	*NRP1;GALNT14;ENPEP;PRKAA2;ARHGEF28;RORA;SLC6A3;SYNE2;CNDP2;TTC28;PKHD1;ARHGAP42;SNX29;ARSB;VCAM1;INSR;PPP2R3A;MYO9A;PPFIBP1;CLCN5;EVC;GSAP;WDFY3;ALPK2;TRABD*

			2B;CREB5
LINC02427	26/100	0.0065133504 181173075	*CTNND2;KLHL32;OTUD7A;GRIK4;ADCY2;FMN2;NALCN;DPP6;CDH20;DNER;NCAM1;SH3GL2;WASF3;BBS2;ARNT2;DTNA;CADM2;TMOD2;MAGI2;LSAMP;MAPK8IP1;ADGRB3;PPP2R2B;CNTN1;CPE;ASTN1*
LINC02334	26/100	0.0065133504 181173075	*NFAT5;CUL5;ANKRD36;CHD9;RGPD6;ZBTB20;RGPD5;PTAR1;SLC16A7;RNF152;ANKRD36C;MBD5;MON2;STPG2;VPS13C;PDE4D;RC3H1;LNPEP;PLEKHA3;PHC3;PIAS2;MOB1B;ZNF717;DGKI;ANKRD36B;TNRC6B*
LINC02338	26/100	0.0065133504 181173075	*ABCD2;MYT1L;HEPACAM;CTNND2;SLC1A2;FMN2;KIAA0513;CTNNA2;ERC2;SH3GL2;GABRA2;RBFOX1;DTNA;TMOD2;SLC4A10;SYT16;SLC39A12;GRIN2B;SYN2;CNKSR2;DLG2;APC;PPP2R2B;TAFA1;SCN2A;ASTN1*
RAMP2-AS1	26/100	0.0065133504 181173075	*PTPRT;GALNT13;CLSTN2;GRIK4;LDLRAD3;LDLRAD4;GLI3;SCAF8;CDH20;LRIG1;APBB2;MPDZ;WASF3;RFTN2;ARNT2;ANKRD26;MAGI2;EBF1;GFRA1;ESR1;ZDHHC17;PBX1;ARHGAP31;TTC3;ULK2;FBXL7*
GPC6-AS2	26/100	0.0065133504 181173075	*NFAT5;CUL5;ANKRD36;CHD9;ZBTB20;LPP;SLC16A7;RNF152;GPC6;ANKRD36C;MBD5;STPG2;VPS13C;PDE4D;FNDC3B;RC3H1;LNPEP;PLEKHA3;PHC3;PIAS2;MOB1B;ZNF717;WDPCP;KIAA0825;DGKI;ANKRD36B*
DOCK4-AS1	26/100	0.0065133504 181173075	*NFAT5;ANKRD36;KMT2C;RGPD6;ZBTB20;RGPD5;ZDHHC21;RGPD8;SLC9C1;MYSM1;ATXN1;ZNF407;ANKRD36C;MBD5;MON2;VPS13C;DNAH14;RC3H1;VPS13B;PLEKHA3;PHC3;ZNF717;WDPCP;BIRC6;KIAA0825;ANKRD36B*
LAMP5-AS1	26/100	0.0065133504 181173075	*DOCK3;TENM3;TSHZ2;CELF4;CACNA1E;CLTCL1;SRGAP3;ERC2;ADAMTS9;ZNF521;RGS7;GOLGA8S;RBFOX1;PRMT8;GOLGA8T;CADM1;GRID1;IL17RA;CNKSR2;MMP16;AMPH;FAT3;CNTN3;TCF4;ANKRD18A;PDZRN4*
GLCCI1-DT	26/100	0.0065133504 181173075	*STX12;DOCK3;ATP8A1;PPM1L;RNF38;DPP6;NCAM1;FYN;SCAPER;ZSWIM5;NDFIP1;GRID1;TCF12;FBXL17;PJA2;ARHGAP31;TG;FCHSD2;PDP2;NBEA;SYNJ1;TBC1D5;ELMO1;CCSER2;RAPGEF2;ZMYND11*
NCKAP5-AS1	26/100	0.0065133504 181173075	*PATJ;ANKRD36;KMT2C;GREB1L;ZBTB20;DUX4;MYSM1;ATXN1;KIAA1328;ZNF407;POTEC;ANKRD26;MBD5;ANKRD30A;DNAH14;RC3H1;VPS13B;PHC3;ZNF717;TTC6;ZNF678;BIRC6;CDK12;ZNF236;KIAA0825;ANKRD36B*
MSC-AS1	26/100	0.0065133504 181173075	*NRP1;GALNT14;ENPEP;MTMR2;BNC2;MAP3K7CL;DYSF;ASAP1;GLIS1;SDCBP;ARHGAP42;SNX29;CHSY3;DIP2C;GPC6;ARSB;KIRREL1;VCAM1;MITF;LHFPL2;GNG12;SNAI2;PLIN2;ALPK2;RGL1;LRP12*
WWTR1-IT1	26/100	0.0065133504 181173075	*ANKRD36;KMT2C;TSHZ2;RGPD6;ZBTB20;RGPD5;RGPD8;LPP;ATXN1;KIAA1328;ZNF407;ANKRD36C;ZNF462;ZFHX3;MBD5;MGA;RC3H1;VPS13B;PHC3;ZNF717;WDPCP;BIRC6;ZNF236;KIAA0825;ANKRD36B;TNRC6B*
SLIT2-IT1	26/100	0.0065133504 181173075	*NFAT5;CUL5;PPM1L;RGPD6;ZBTB20;RGPD5;RGPD8;KIAA1328;SLC16A7;THSD7A;RNF152;UNC13C;MBD5;STPG2;PDE4D;VPS13C;VPS13B;ADAM32*

			;PLEKHA3;PHC3;PIAS2;MOB1B;INPP4B;WDPCP;DGKI;CNTNAP5
SEMA6A-AS2	26/100	0.0065133504181173075	NLGN1;PHLPP1;FMN1;NKAIN3;UBL3;MXI1;ANKFY1;MAPK1;PHACTR1;DIP2C;SOX6;SRGAP2B;ARNT2;MYEF2;MYO10;MICAL3;MYO5A;CABLES1;MITF;IGSF11;ITPKB;NRG3;APC;SPIRE1;MDGA2;MAPRE2
SH3TC2-DT	26/100	0.0065133504181173075	FMN1;LYST;PPM1F;COL19A1;SDCBP;GNPTAB;SCFD2;GNG7;MGAT5;ABL2;PHACTR1;ZNF106;HMCN1;SRGAP2;ANKRD28;COL22A1;MOK;MYO5A;NFATC2;MITF;LHFPL2;IGSF11;MOSMO;MELTF;B4GALT6;CNIH3
KCNIP1-AS1	26/100	0.0065133504181173075	MEGF11;TMPRSS3;ILDR2;SLC35F1;FAM171A1;RIC8B;SV2C;MAN2A2;SNTG1;DNER;TSPAN3;FAM81A;PAK5;TMEM132B;NTRK3;RANBP17;TCF12;CACNA2D3;PRKCA;ARHGAP26;SEZ6L;CDC42BPA;MAPK8IP1;LRFN2;CLDN10;FAT3
PKIA-AS1	26/100	0.0065133504181173075	NFAT5;ACSS3;CUL5;PPM1L;RGPD6;ZBTB20;RGPD5;ZDHHC21;CDH7;HS6ST3;AP5M1;KIAA1328;SLC16A7;THSD7A;RNF152;UNC13C;MBD5;STPG2;ABCA5;PDE4D;PHC3;MOB1B;INPP4B;ZNF717;DGKI;CNTNAP5
NAV2-AS3	26/100	0.0065133504181173075	NFAT5;RGPD6;ZBTB20;RGPD5;ZDHHC21;SLC9C1;AP5M1;KIAA1328;TRIM2;SLC16A7;KIF21A;THSD7A;SCAPER;ANKRD36C;MBD5;MON2;ARHGEF12;VPS13C;FBXL17;PLEKHA3;KLHL3;MOB1B;ZNF678;PTPN4;KIAA0825;CPEB4
NAV2-AS1	26/100	0.0065133504181173075	DOCK3;DOCK9;UBL3;SNX25;BBS9;STK32A;TEAD1;RXRG;MYEF2;CADM1;MYO10;DENND2B;SAMD4A;FAM189A2;CABLES1;MITF;NAV2;FRMD3;ITPKB;TANC1;TG;TCERG1L;IFT81;SLC27A6;ST6GALNAC3;ITGA9
OPCML-IT1	26/100	0.0065133504181173075	CRB1;MEGF11;PCDH15;GRIK3;GRIK4;SLC35F1;GRIK2;DNER;TMEM108;TNR;FYN;NCAM1;GRIA4;OPCML;GRID2;CA10;DSCAM;CADM2;TMEM132B;TCF12;LSAMP;LHFPL3;EPN2;SMOC1;DSCAML1;APBA2
TSPAN18-AS1	26/100	0.0065133504181173075	ENPEP;DYSF;RORA;CACNA1C;SLC9C1;LPP;TTC28;PTAR1;ZNF449;PHACTR2;PRKG1;PDK1;RBM33;MBNL1;MBD5;KSR1;ZNF160;INSR;ATP11C;RC3H1;EML1;PHC3;MYO9A;AGO2;PPP1R12B;TNRC6B
GRM5-AS1	26/100	0.0065133504181173075	RTN1;SHC3;KCNC1;MYT1L;NRXN1;SLC1A2;KIAA0513;GRM5;BRINP1;DLGAP1;ERC2;SH3GL2;ANKS1B;OPCML;RBFOX1;TMOD2;SLC4A10;SYT16;GRIN2B;SYN2;SNAP91;SYNJ1;ADGRB3;SCN8A;TAFA1;SCN2A
DLG2-AS2	26/100	0.0065133504181173075	RYR2;KMT2C;RGPD6;ZBTB20;RGPD5;ZDHHC21;RGPD8;LPP;RGPD4;POTEM;ATXN1;POTEH;TMEM225;POTEG;ANKRD36C;ZFHX3;MBD5;PLEKHA3;PHC3;PYGO1;DLG2;ZNF717;NFIA;PRR16;UTRN;PTPN4
PAPPA-AS1	26/100	0.0065133504181173075	NFAT5;TSPAN33;FSTL1;CMIP;SYNE2;PKHD1;SNX29;SLC17A1;GPC6;PAQR5;PDE4D;SLC2A13;SLC12A1;CRIM1;KCNJ15;LAMB1;PPP2R3A;GNG12;ARHGAP24;MYO1E;CLCN5;EVC;LATS2;PAPPA;FAT1;FBN1
MAPT-AS1	26/100	0.0065133504181173075	CRB1;GALNT13;RTN1;CTNND2;NRXN1;GRIK4;ADCY2;FMN2;GRIK2;TRIM9;CDH20;DNER;NCAM1;LRRC4C;GRIA4;RFTN2;GRID2;DSCAM;CADM2;TMO

			D2;TCF12;LSAMP;ADGRB3;SMOC1;DSCAML1;AST N1
LDLRAD4-AS1	26/100	0.0065133504 181173075	ANKRD36;KMT2C;ZBTB20;LDLRAD4;MYSM1;ATXN 1;KIAA1328;ZNF407;BPTF;ANKRD26;MBD5;MON 2;ANKRD30A;MGA;DNAH14;RC3H1;VPS13B;PHC3 ;ZNF717;ZNF678;WDPCP;BIRC6;ZNF236;KIAA0 825;ANKRD36B;TNRC6B
FBXW7-AS1	26/100	0.0065133504 181173075	MYT1L;FRMPD4;KIAA0513;AKAP11;HERC1;SV2B ;ERC2;SCAPER;RNF111;RBFOX1;SYT1;SGTB;PR KCB;SLC4A10;GRIN2B;SYN2;GABRG2;SNAP91;P JA2;CNKSR2;SYNJ1;APC;SCN8A;RAPGEF2;SCN2 A;RAPGEF4
LINC02794	25/100	0.0122800943 46006434	NRP1;GALNT14;ENPEP;ANKRD33B;PRKAA2;ARHG EF28;USH1C;LRP2;SLC6A3;CNDP2;PKHD1;SNX2 9;ENPP3;SLC17A1;CUBN;EGLN3;VCAM1;INSR;C RIM1;PPP2R3A;MYO9A;CLCN5;ALPK2;TRABD2B; CREB5
LINC00710	25/100	0.0122800943 46006434	MACF1;NFAT5;ANKRD36;CHD9;KMT2C;ZBTB20;R ORA;ZDHHC21;SLC9C1;LPP;ATXN1;MACROD2;EV I5;ANKRD36C;DNAH11;MBD5;MON2;VPS13C;RC3 H1;VPS13B;PLEKHA3;PHC3;KIAA0825;ANKRD36 B;TNRC6B
LINC00349	25/100	0.0122800943 46006434	SH3KBP1;SEMA3A;AKAP6;SDCBP;GNG2;SCFD2;G NG7;PRAME;HMCN1;SRGAP2;SOX5;BCAS3;KIRRE L1;EYA1;MYO10;PCDH7;HMGA2;LHFPL2;CORO2B ;AIMP1;IGSF11;MOSMO;B4GALT6;FREM1;CNIH3
LINC00387	25/100	0.0122800943 46006434	PTPRT;TMEM63C;GREB1L;LDLRAD4;FAM214A;HH AT;PSD3;FAM241A;POTED;ST8SIA6;APBB2;PCM TD1;VAV3;KDM4B;CERS6;NEBL;SIAH2;MRTFB;T BC1D9;GFRA1;PRLR;ESR1;PBX1;NELL2;NAT1
LINC00456	25/100	0.0122800943 46006434	IGSF3;ABCB5;FMN1;LIMD1;LYST;FCRLA;SDCBP ;SGCD;UBL3;GNPTAB;CHCHD6;ABL2;PHACTR1;Z NF106;PRAME;MORC1;MINAR1;ARHGEF11;MYEF2 ;MOK;MYO5A;CABLES1;MITF;NSG1;CNIH3
LINC01865	25/100	0.0122800943 46006434	NECAB1;RTN1;MYT1L;FRMPD4;ATL1;SLC1A2;IQ CJ-SCHIP1;KIAA0513;ERC2;ZNF521;SH3GL2;RBFO X1;SGTB;TMOD2;SLC4A10;KIAA1549L;SLC39A1 2;GRIN2B;SYN2;CNKSR2;SYNJ1;PPP2R2B;TAFA 1;AMPH;SCN2A
LINC02676	25/100	0.0122800943 46006434	PATJ;ANKRD36;CBWD3;GXYLT2;MYSM1;FAM214A ;MIPOL1;PSD3;POTED;POTEG;MBD5;MON2;ADGR V1;ANKRD30A;CFAP70;LRBA;DNAH14;PLXDC2;L RP1B;ZNF717;TTC6;NEK10;ZNF678;KIAA0825; ANKRD36B
LINC00844	25/100	0.0122800943 46006434	GALNT13;RTN1;PHLPP1;HEPACAM;LUZP2;CTNND 2;KLHL32;GRIK4;ADCY2;FMN2;CDH20;FUT9;PH ACTR3;NCAM1;WASF3;RFTN2;NTRK2;DTNA;TMOD 2;LSAMP;KLF15;ETNPPL;TAFA5;PPP2R2B;SMOC 1
LINC00391	25/100	0.0122800943 46006434	HEPACAM;CTNND2;NRXN1;GRIK4;ADCY2;FMN2;T RIM9;CDH20;DNER;NCAM1;WASF3;JAM2;GRIA4; RFTN2;DTNA;DSCAM;CADM2;NTRK3;TMOD2;LSAM P;APC;ADGRB3;PPP2R2B;APBA2;ASTN1
LINC01998	25/100	0.0122800943 46006434	GRIA1;HEPACAM;LUZP2;CTNND2;KLHL32;GRIK4 ;ADCY2;FMN2;IQCJ-SCHIP1;NKAIN3;CDH20;FUT9;NCAM1;SH3GL2;J AM2;WASF3;RFTN2;NTRK2;DTNA;CADM2;TMOD2; LSAMP;APC;PPP2R2B;APBA2

LINC00504	25/100	0.0122800943 46006434	*PTPRT;IGSF3;LDLRAD3;FMN1;AFF3;FAM214A;T MEM241;GLI3;FCRLA;HHAT;FAM241A;ABL2;ST8 SIA6;VAV3;CERS6;MRTFB;TBC1D9;MITF;GFRA1 ;PRLR;ESR1;INPP4B;KIF16B;BMPR1B;FSIP1*
LINC02239	25/100	0.0122800943 46006434	*GALNT13;HEPACAM;LUZP2;CTNND2;KLHL32;PCD H15;GRIK4;ADCY2;FMN2;CDH20;FUT9;NCAM1;K IF21B;JAM2;WASF3;GRIA4;RFTN2;NTRK2;DTNA ;TCF12;FRMD5;APC;PPP2R2B;SMOC1;APBA2*
LINC00928	25/100	0.0122800943 46006434	*CRB1;GALNT13;PHLPP1;LUZP2;CTNND2;PCDH15 ;GRIK4;TRIM9;CDH20;NCAM1;KIF21B;GRIA4;R FTN2;GRID2;DSCAM;KCND2;CADM2;TMOD2;TCF1 2;LSAMP;LHFPL3;FCHSD2;SMOC1;DSCAML1;APB A2*
LINC01751	25/100	0.0122800943 46006434	*NRP1;GALNT14;ENPEP;ANKRD33B;PRKAA2;ARHG EF28;LRP2;SLC6A3;CNDP2;PKHD1;ARHGAP42;T TC21B;ST8SIA4;ENPP3;PDK1;CUBN;EGLN3;VCA M1;KSR1;INSR;ANXA4;COL23A1;MYO9A;PLIN2; ALPK2*
LINC02035	25/100	0.0122800943 46006434	*MAPKBP1;MACF1;MTMR3;CHD9;KMT2C;PCNX1;NI PBL;RNF111;RBM33;SPEN;MBNL1;DST;EXOC6B; RC3H1;DNAJC13;LNPEP;PHC3;RC3H2;HIPK3;PI AS1;KANSL1;RFX7;SLC49A4;ZNF236;TNRC6B*
LINC02339	25/100	0.0122800943 46006434	*GALNT13;PID1;SHC3;MEGF11;NRXN1;SLC35F1; GRIK2;RASSF2;SNTG1;DNER;TNR;LRRC4C;CACN G2;GRIA4;GRID2;CA10;DSCAM;CADM2;TMEM132 B;LHFPL3;SEZ6L;EPN2;ADGRB3;DSCAML1;UNC7 9*
LINC01338	25/100	0.0122800943 46006434	*HEPACAM;LUZP2;CTNND2;KLHL32;GRIK4;ADCY2 ;FMN2;IQCJ- SCHIP1;CDH20;FUT9;NCAM1;WASF3;JAM2;RFTN 2;NTRK2;DTNA;TMOD2;GABRG1;ETNPPL;TAFA5; APC;PPP2R2B;CPE;ASB3;APBA2*
RBMS3-AS2	25/100	0.0122800943 46006434	*NFAT5;ANKRD36;CHD9;KMT2C;RGPD6;ZBTB20;Z DHHC21;SLC9C1;LPP;ATXN1;ZNF407;ANKRD36C ;DNAH11;MBD5;MON2;VPS13C;RC3H1;VPS13B;P LEKHA3;PHC3;ZNF717;WDPCP;BIRC6;KIAA0825 ;ANKRD36B*
PKP4-AS1	25/100	0.0122800943 46006434	*NFAT5;PATJ;STXBP4;KMT2C;RGPD6;RGPD5;RGP D8;SYNE2;RGPD4;SCAF8;ZNF407;SAMD12;RNF1 11;BPTF;MBD5;ARHGEF12;LRBA;VPS13B;PHC3; MYO9A;WDPCP;WDFY3;BIRC6;ZNF236;DOCK1*
TMEM72-AS1	25/100	0.0122800943 46006434	*CYFIP2;GALNT13;RTN1;CTNND2;NRXN1;KLHL32 ;GRIK4;ADCY2;FAM171A1;CDH20;NCAM1;SH3GL 2;WASF3;GRIA4;BBS2;RFTN2;ARNT2;CADM2;NT RK3;TMOD2;DNM3;ADGRB3;PPP2R2B;DSCAML1;A PBA2*
MYT1L-AS1	25/100	0.0122800943 46006434	*RTN1;KCNC1;MYT1L;FRMPD4;ATL1;RPH3A;UNC8 0;KIAA0513;ERC2;CACNG2;RGS7;RBFOX1;SYT1 ;SLC4A10;SYT16;GRIN2B;SYN2;GABRG2;SNAP9 1;CNKSR2;DLG2;SYNJ1;ADGRB3;SCN8A;SCN2A*
CADM3-AS1	25/100	0.0122800943 46006434	*GRIA1;RTN1;KCNC1;MYT1L;CTNND2;NRXN1;ATL 1;SLC1A2;FMN2;KIAA0513;NCAM1;ERC2;SH3GL 2;TMOD2;LSAMP;FAM219A;SYN2;SNAP91;CNKSR 2;DNM3;ADGRB3;PPP2R2B;SCN2A;APBA2;ASTN1*
PACRG-AS3	25/100	0.0122800943 46006434	*SH3GL3;PDE1C;PPM1L;HEPACAM;KLHL32;OTUD7 A;ZBTB20;NKAIN2;GRM3;DPYSL5;MVB12B;SLC1 6A7;THSD7A;RNF152;ANKS1B;RFTN2;UNC13C;S TPG2;MOB1B;DNM3;TTLL7;PPP2R2B;ZNF536;DG KI;CNTNAP5*

NRG3-AS1	25/100	0.0122800943 46006434	*ACSS3;GALNT17;EPS8;ADAMTSL1;KIF21A;THSD 7A;RNF152;PACRG;ANGPT1;TANGO2;KLHL3;PAR VB;MYRIP;MOB1B;TBC1D1;BACE2;NRG3;TMEM11 6;RCAN2;SPIRE1;ERP27;CFTR;DGKI;LHX9;CNT NAP5*
SHANK2-AS1	25/100	0.0122800943 46006434	*PATJ;ANKRD36;KMT2C;RGPD6;ZBTB20;SLC9C1; MYSM1;ATXN1;KIAA1328;ZNF407;ANKRD26;MBD 5;ANKRD30B;ANKRD30A;DNAH14;RC3H1;VPS13B ;PHC3;ZNF717;ZNF678;BIRC6;ZNF236;KIAA08 25;ANKRD36B;TNRC6B*
CNTN4-AS2	25/100	0.0122800943 46006434	*TSHZ2;RGPD6;ZBTB20;RGPD5;RGPD8;AKAP13;S CAF8;KIAA1328;ZNF407;MPDZ;ADAMTS9;ZNF46 2;MBD5;ANKRD30A;VPS13B;LRP1B;ZNF717;MMP 16;NFIA;TTC3;FAT3;CNTN3;CNTN4;UTRN;ZNF2 36*
RAPGEF4-AS1	25/100	0.0122800943 46006434	*RTN1;KCNC1;MYT1L;FRMPD4;SLC1A2;GRM3;KIA A0513;GRM5;SV2B;ERC2;SH3GL2;RBFOX1;SLC4 A10;SYT16;ATP2B2;GRIN2B;SYN2;SNAP91;CNK SR2;DLG2;SYNJ1;SCN8A;TAFA1;SCN2A;RAPGEF 4*
TPRG1-AS2	25/100	0.0122800943 46006434	*PTPRT;MAST4;CCDC126;GREB1L;LDLRAD3;FAM2 14A;TMEM241;FAM241A;POTED;ST8SIA6;VAV3; KDM4B;SIAH2;COG2;CYBRD1;TBC1D9;GFRA1;PR LR;ESR1;DCDC1;NAT1;KIF16B;NEK10;BMPR1B; FSIP1*
GNG12-AS1	25/100	0.0122800943 46006434	*BNC2;ABCB5;LRMDA;SDCBP;SGCD;UBL3;GNG7;R GS20;ZNF106;HMCN1;DIP2C;EVI5;SOX5;MYEF2 ;PCDH7;SAMD4A;CABLES1;MITF;GNG12;STON1- GTF2A1L;IGSF11;ITPKB;NFIA;PDZRN3;DDR2*
NCKAP5-IT1	25/100	0.0122800943 46006434	*PATJ;ANKRD36;KMT2C;SLC9C1;MYSM1;ATXN1;Z NF407;PSD3;POTED;ANKRD26;MBD5;MON2;ANKR D30A;DNAH14;RC3H1;VPS13B;PLXDC2;LRP1B;T TC6;NEK10;ZNF678;WDPCP;BIRC6;KIAA0825;A NKRD36B*
DPYD-AS1	25/100	0.0122800943 46006434	*MACF1;MCTP1;MARCHF1;CHD9;SNX30;BACH1;RP S6KA3;AKAP13;PTAR1;PCNX1;FCHO2;IL6R;EVI 5;LYN;ANKRD36C;MBNL1;CCDC18;MON2;VPS13C ;PTPN13;HIPK3;PTPRE;MDFIC;DPYD;KIAA0825*
CCDC144NL-AS1	25/100	0.0122800943 46006434	*TSHZ2;CACNA1C;RPTOR;AKAP10;SCAF8;HERC2; MPRIP;ZNF407;SACS;MPDZ;ADAMTS9;ZNF287;S PECC1;ZNF462;RBFOX2;EYA1;COL25A1;TOP3A; TIAM2;NCOR1;MMP16;ULK2;FAT3;CNTN3;ADGRL 2*
DIRC3-AS1	25/100	0.0122800943 46006434	*DNAH5;PRICKLE2;COL19A1;EHBP1;SRGAP2C;GN G2;SACS;FAM180A;SRGAP2;SRGAP2B;SLC15A5; VAT1L;SOX5;MAP4K4;NTNG1;TRIM43B;KIAA154 9L;FRMD4A;CORO2B;ACER2;MOSMO;OR4F15;MMP 16;ZNF536;CNIH3*
CPB2-AS1	25/100	0.0122800943 46006434	*CRB1;GALNT13;PID1;PHLPP1;NRXN1;KLHL32;G RIK4;GRIK2;TRIM9;RASSF2;CDH20;DNER;TNR; NCAM1;GRIA4;RFTN2;ARNT2;DSCAM;CADM2;LSA MP;LHFPL3;IGSF11;ADGRB3;PPP2R2B;ASTN1*
VLDLR-AS1	25/100	0.0122800943 46006434	*FHOD3;PRKN;TBC1D19;ACSS3;ARHGEF28;BCL2L 13;SLC16A7;KIF21A;THSD7A;DIP2C;TEAD1;PA CRG;TANGO2;MITF;KLHL3;ITFG1;MOB1B;AFG3L 2;TBC1D1;RCAN2;SPIRE1;ALPK3;OSBPL1A;CNT NAP5;CPEB4*
MFF-DT	25/100	0.0122800943 46006434	*NLGN1;PPM1L;ZBTB20;MSANTD4;UBL3;SLC16A7 ;THSD7A;SOX6;BBS2;RFTN2;ARNT2;MBD5;NDFI*

			P1;SLC2A13;MAGI2;FBXL17;ZDHHC17;PJA2;MOB1B;PDP2;TBC1D5;VPS41;SPIRE1;WDFY3;CPEB4
CREB3L2-AS1	25/100	0.012280094346006434	NFAT5;ANKRD36;KMT2C;ZBTB20;ZDHHC21;SLC9C1;LPP;MYSM1;ATXN1;ANKRD36C;MBD5;MON2;VPS13C;DNAH14;RC3H1;VPS13B;PLEKHA3;PHC3;ZNF717;ZNF678;WDPCP;BIRC6;KIAA0825;ANKRD36B;TNRC6B
NRXN2-AS1	25/100	0.012280094346006434	GALNT13;CTNND2;NRXN1;GRIK4;FMN2;GRIK2;TRIM9;RASSF2;CDH20;DNER;NCAM1;FYN;LRRC4C;GRIA4;RFTN2;GRID2;DSCAM;CADM2;NTRK3;TMOD2;LSAMP;LHFPL3;ADGRB3;APBA2;ASTN1
FGF14-IT1	25/100	0.012280094346006434	DOCK4;TSHZ2;ZBTB20;OR9Q1;TTC28;KIAA1328;TMEM225;SNTG1;ZNF407;SACS;MPDZ;ADAMTS9;ZNF462;DNAH11;MBD5;MYO9A;PIAS2;MMP16;NFIB;WDPCP;WDFY3;FAT3;TCF4;CNTN3;KIAA0825
NNT-AS1	25/100	0.012280094346006434	GALNT13;PHLPP1;GRIK4;FMN2;TRIM9;DNER;NCAM1;SOX6;GRIA4;BBS2;RFTN2;ARNT2;CADM2;TTC33;TMOD2;MAGI2;LSAMP;FBXL17;PRKCA;APC;ADGRB3;PPP2R2B;SPIRE1;MAPRE2;ASTN1
C1QTNF7-AS1	25/100	0.012280094346006434	ABCB5;FMN1;BCL2L13;SDCBP;SGCD;UBL3;MXI1;LONP2;ABL2;RGS20;RTTN;ZNF106;DIP2C;MYEF2;MYO10;SETDB2;MYO5A;CABLES1;MITF;PARVB;NSG1;GNG12;INPP4B;SPIRE1;OSBPL1A
ANO3-AS1	25/100	0.012280094346006434	ACSS3;CUL5;PPM1L;GLYAT;HS6ST3;CDH7;AP5M1;SLC16A7;THSD7A;SLC17A1;RNF152;UNC13C;CUBN;STPG2;ABCA5;PDE4D;SLC2A13;WDR72;MOB1B;INPP4B;MSRA;PLCXD3;DGKI;CNTNAP5;CPEB4
NAV2-AS5	25/100	0.012280094346006434	MACF1;NFAT5;ANKRD36;CHD9;KMT2C;ZBTB20;RORA;ZDHHC21;SLC9C1;LPP;RPS6KA3;ATXN1;EVI5;ANKRD36C;DNAH11;MBD5;MON2;VPS13C;RC3H1;PLEKHA3;PHC3;FER;KIAA0825;ANKRD36B;TNRC6B
OPCML-IT2	25/100	0.012280094346006434	PSIP1;SLC35F1;ZDHHC21;RIMS1;IGSF21;SNAPC3;DNER;ST8SIA5;KIF21A;FYN;NCAM1;OPCML;GRID2;CA10;DSCAM;CADM2;TMEM132B;NTRK3;LSAMP;DNM3;MMP16;SPIRE1;DSCAML1;CNTNAP5;SNTB1
TSPAN9-IT1	25/100	0.012280094346006434	NFAT5;CUL5;ANKRD36;KMT2C;RGPD6;ZBTB20;KIAA1328;ZNF407;SLC16A7;RNF152;MBD5;MON2;STPG2;PDE4D;RC3H1;VPS13B;LNPEP;PHC3;MYO9A;MOB1B;ZNF717;KIAA0825;DGKI;ANKRD36B;TNRC6B
TMEM132D-AS2	25/100	0.012280094346006434	GABRB3;SLC24A2;MYT1L;STXBP1;CELF4;NALCN;RPH3A;UNC80;DPP6;SPOCK3;TBX20;PAK3;TMEM132D;PTPRN2;SYT1;PRKCE;GABRG2;SNAP91;CNKSR2;SGSM1;SYNJ1;SCN8A;CDH18;UNC79;HCN1
JAKMIP2-AS1	25/100	0.012280094346006434	GALNT13;CTNND2;NRXN1;GRIK4;FMN2;TRIM9;DPP6;CDH20;DNER;NCAM1;LRRC4C;GRIA4;RFTN2;GRID2;DTNA;DSCAM;CADM2;TMOD2;LSAMP;FAM219A;APC;ADGRB3;PPP2R2B;APBA2;ASTN1
LINC01600	24/100	0.02289331770290072	CUBN;NRP1;GALNT14;ENPEP;NLGN1;EGLN3;VCAM1;ANKRD33B;PRKAA2;MAML2;KSR1;COL23A1;MYO9A;SLC6A3;TTC28;MXI1;GRB10;ENPP3;ALPK2;OSBPL1A;RGL1;STK32B;ZNF521;ANKRD6
LINC02052	24/100	0.0228933177	DGKG;SPECC1;GALNT13;SLC24A3;DSCAM;MAP3K

		0290072	*7CL;SLC35F1;LHFPL3;GRIK2;SEL1L2;EPN2;TTLL7;TRIM9;RASSF2;LRRC7;HMCN2;TMEM108;ITGA8;TNR;NCAM1;ASB2;PLXNA4;ASTN1;GRIA4*
LINC00320	24/100	0.0228933177 0290072	*RFTN2;SH3GL3;RTN1;DTNA;HEPACAM;CADM2;CTNND2;NRXN1;TMOD2;KLHL32;OTUD7A;ADARB2;NKAIN2;GRM3;DNM3;RASSF2;ADGRB3;CDH20;PPP2R2B;MVB12B;NCAM1;SH3GL2;WASF3;ANKS1B*
LINC02774	24/100	0.0228933177 0290072	*RFTN2;GALNT13;SHC3;RTN1;DSCAM;MEGF11;TMEM132B;NRXN1;TMOD2;GRIK4;SLC35F1;LHFPL3;GRIK2;EPN2;TRIM9;RASSF2;ADGRB3;SNTG1;TNR;NCAM1;DSCAML1;APBA2;GRIA4;OPCML*
LINC01074	24/100	0.0228933177 0290072	*RFTN2;CRB1;NTRK2;GALNT13;DTNA;DSCAM;HEPACAM;CTNND2;KLHL32;LSAMP;GRIK4;ADCY2;FMN2;GABRG1;CDH20;PPP2R2B;SMOC1;DNER;PHACTR3;TNR;NCAM1;CTNNA2;JAM2;ASTN1*
LINC02607	24/100	0.0228933177 0290072	*RBFOX1;RTN1;SYT1;MYT1L;FRMPD4;ATL1;SLC4A10;SYT16;GRIN2B;SYN2;SNAP91;CNKSR2;KIAA0513;DLG2;SYNJ1;SV2B;SCN8A;NOS1AP;TAFA1;AMPH;SCN2A;ERC2;SH3GL2;RAPGEF4*
LINC00484	24/100	0.0228933177 0290072	*ZNF573;NFAT5;ZFHX3;MBD5;ANKRD36;KMT2C;MGA;RGPD6;ZBTB20;RC3H1;LNPEP;RGPD8;PHC3;PCNX1;KIAA1328;HERC1;ZNF717;ZNF407;WDPCP;BIRC6;UTRN;ATP9B;ANKRD36B;TNRC6B*
LINC01238	24/100	0.0228933177 0290072	*PTPRT;USP14;KDM4B;AUTS2;ANKRD30A;MRTFB;COG2;GREB1L;TBC1D9;GFRA1;DUX4;ESR1;FAM214A;DCDC1;NAT1;TTC6;PSD3;FAM241A;POTED;NEK10;ST8SIA6;ZNF385D;BMPR1B;POTEC*
LINC01323	24/100	0.0228933177 0290072	*RFTN2;CRB1;GRID2;GALNT13;DSCAM;CADM2;LUZP2;PCDH15;LSAMP;GRIK4;GRIK2;PHF21B;TRIM9;FRMD5;BRINP2;DLG2;SMOC1;PHACTR3;NCAM1;FYN;CTNNA3;FGF12;DSCAML1;GRIA4*
LINC00461	24/100	0.0228933177 0290072	*RFTN2;CRB1;GRID2;GALNT13;DSCAM;HEPACAM;CADM2;CTNND2;NRXN1;TMOD2;LSAMP;GRIK4;FMN2;TRIM9;RASSF2;APC;ADGRB3;CDH20;PPP2R2B;DNER;NCAM1;APBA2;ASTN1;GRIA4*
LINC02431	24/100	0.0228933177 0290072	*LRRC69;UNC13C;NFAT5;ACSS3;STPG2;CUL5;ABCA5;PPM1L;PDE4D;ZBTB20;ADAM32;CDH7;HS6ST3;MOB1B;INPP4B;AP5M1;KIAA1328;ZNF208;SLC16A7;ERP27;THSD7A;RNF152;DGKI;CNTNAP5*
LINC02224	24/100	0.0228933177 0290072	*PTPRT;USP14;CERS6;CLSTN2;CYBRD1;TBC1D9;GFRA1;LRP2;AFF3;ESR1;TMEM241;PBX1;RERG;MED13L;DACH1;FGF14;NAT1;KIF16B;FAM241A;MALRD1;BMPR1B;FSIP1;PRKACB;FGF10*
LINC01060	24/100	0.0228933177 0290072	*CUBN;NRP1;GALNT14;ENPEP;MGAM;EGLN3;VCAM1;PRKAA2;KSR1;INSR;COL23A1;LDB2;LRP2;MYO9A;SLC6A3;CNDP2;PDGFD;GIPC2;GRB10;PLIN2;ENPP3;ALPK2;STK32B;ARSB*
LINC02123	24/100	0.0228933177 0290072	*RFTN2;NTRK2;DTNA;HEPACAM;CADM2;LUZP2;CTNND2;TMOD2;KLHL32;SLC1A2;LSAMP;GRIK4;SLC6A11;ADCY2;FMN2;APC;CDH20;PPP2R2B;PHACTR3;CTNNA2;APBA2;JAM2;WASF3;ASTN1*
LINC02389	24/100	0.0228933177 0290072	*RBFOX1;RTN1;SYT1;KCNC1;MYT1L;FRMPD4;ATL1;SLC4A10;SYT16;GRIN2B;SYN2;GABRG2;SNAP91;CNKSR2;RIMS1;KIAA0513;DLG2;SV2B;SCN8A;TBC1D30;TAFA1;SCN2A;ERC2;SH3GL2*
LINC02281	24/100	0.0228933177 0290072	*RTN1;ARPP21;KCNC1;FRMPD4;MYT1L;NRXN1;TMOD2;SLC1A2;SLC4A10;OTUD7A;SYT16;HTR2C;SYN2;SNAP91;TMEM225;ADGRB3;PPP2R2B;TAFA1;YPEL1;SCN2A;ERC2;APBA2;TBATA;OPCML*

LINC02306	24/100	0.0228933177 0290072	*VAV3;KDM4B;CERS6;CLSTN2;LRBA;ITPR2;TBC1 D9;LDLRAD3;LRP2;AFF3;PRLR;ESR1;DCDC1;RE RG;MED13L;DACH1;FGF14;FAM241A;NEK10;MAL RD1;BMPR1B;FSIP1;PRKACB;FGF10*
LINC00622	24/100	0.0228933177 0290072	*MINAR1;ARHGEF11;KIRREL1;MYEF2;IGSF3;MYO 10;MOK;MYO5A;CABLES1;MITF;FMN1;PARVB;NS G1;SDCBP;SGCD;CHCHD6;ABL2;RGS20;PHACTR1 ;PRAME;ZNF106;HMCN1;SRGAP2;SNX8*
LINC02516	24/100	0.0228933177 0290072	*ANKRD36C;PATJ;ANKRD26;MBD5;MON2;ANKRD36 ;ANKRD30A;LRBA;VPS13C;DNAH14;GREB1L;RC3 H1;VPS13B;ZDHHC21;SLC9C1;PHC3;MYSM1;ZNF 717;TTC6;ZNF407;POTED;ZNF678;KIAA0825;A NKRD36B*
LINC02564	24/100	0.0228933177 0290072	*RFTN2;USP14;PHLPP1;LAMA1;LUZP2;CTNND2;A BCB5;PCDH15;ADCY2;FMN2;NLK;IGSF11;FRMD5 ;CDH20;ZNF280B;SMOC1;ADGRB1;MVB12B;NCAM 1;ERC1;SOX6;CSMD2;MDGA2;APBA2*
LINC02078	24/100	0.0228933177 0290072	*SVIL;SLC24A3;BNC2;DENND2B;TPM1;OR9Q1;UN C5D;CACNA1C;KLHL13;SEL1L2;RIMS2;BMPER;T MEM225;CDC42EP3;KCNMA1;HMCN2;ITGA8;SPOP ;TSPAN2;PGM5;PPP1R12B;ASB2;PDZRN3;FBXL7*
LINC01801	24/100	0.0228933177 0290072	*ZNF573;USP24;MACF1;CREBBP;ITGA4;BICRAL; LRBA;IREB2;DENND4C;CHD6;TBC1D9;VPS13B;A FF3;MYO9A;MED13L;SCAF8;ZNF718;ELF2;HERC 1;PPIP5K2;TTC21B;ST8SIA6;RNF111;BPTF*
KIRREL3-AS3	24/100	0.0228933177 0290072	*KIRREL3;RBFOX1;SYT1;KCNC1;MYT1L;FRMPD4; CACNA2D3;SLC4A10;CELF4;GRIN2B;SYN2;GABR G2;SNAP91;CNKSR2;LRFN2;KIAA0513;DLG2;SV 2B;SCN8A;TAFA1;SCN2A;ERC2;RGS7;HCN1*
LAMC1-AS1	24/100	0.0228933177 0290072	*NFAT5;ZFHX3;MBD5;ZNF160;TUT4;DNAH14;FND C3B;RGPD6;RC3H1;RGPD5;RGPD8;RASAL2;PHC3 ;MYSM1;BTAF1;MSANTD2;AGO2;ZNF449;KHDC4; PKN2;HIVEP2;ZNF236;TEAD1;RBM33*
ATP2B2-IT2	24/100	0.0228933177 0290072	*UNC13C;NFAT5;ACSS3;STPG2;CUL5;ABCA5;PPM 1L;PDE4D;ZBTB20;CDH7;HS6ST3;MOB1B;INPP4 B;LRFN5;AP5M1;KIAA1328;ZNF208;SLC16A7;E RP27;THSD7A;RNF152;DGKI;ANKRD7;CNTNAP5*
PTPRD-AS1	24/100	0.0228933177 0290072	*RFTN2;GALNT13;DTNA;HEPACAM;CADM2;CTNND2 ;NRXN1;NTRK3;TMOD2;KLHL32;GRIK4;FAM219A ;PTPRD;IQCJ-SCHIP1;TRIM9;RASSF2;ADGRB3;CDH20;PPP2R2 B;DNER;NCAM1;WASF3;ASTN1;GRIA4*
TAB2-AS1	24/100	0.0228933177 0290072	*RFTN2;NTRK2;DTNA;HEPACAM;LUZP2;CTNND2;T MOD2;KLHL32;GRIK4;ADCY2;FMN2;GABRG1;ETN PPL;IQCJ-SCHIP1;NKAIN3;APC;CDH20;FUT9;PPP2R2B;MV B12B;NCAM1;SH3GL2;WASF3;JAM2*
PTPRD-AS2	24/100	0.0228933177 0290072	*RBFOX1;RTN1;SYT1;KCNC1;MYT1L;FRMPD4;ATL 1;SLC1A2;SLC4A10;SYT16;GRIN2B;SYN2;GABR G2;SNAP91;CNKSR2;KIAA0513;GRM5;SV2B;SCN 8A;TAFA1;SCN2A;ERC2;SH3GL2;RAPGEF4*
NAALADL2-AS2	24/100	0.0228933177 0290072	*ANKRD36C;ANKRD36;CHD9;VPS13C;DNAH14;ZBT B20;LNPEP;ZDHHC21;PLEKHA3;ANK3;PTPN13;S LC9C1;LPP;PHC3;TANC2;NAALADL2;RPS6KA3;P TAR1;FER;KCNQ3;ZNF678;MCTP2;KIAA0825;AN KRD36B*
THRB-AS1	24/100	0.0228933177 0290072	*PACRG;ACSS3;THRB;STPG2;PPM1L;TANGO2;GAL NT17;EBF2;PRKAG2;KLHL3;MYRIP;MOB1B;ADAM TSL1;TBC1D1;AUH;TMEM116;RCAN2;SLC16A7;K*

			IF21A;ERP27;THSD7A;RNF152;CNTNAP5;SNTB1
NAALADL2-AS3	24/100	0.02289331770290072	ANKRD36C;NFAT5;MBD5;ANKRD36;KMT2C;VPS13C;DNAH14;ZBTB20;RC3H1;ADAM32;ZDHHC21;PLEKHA3;SLC9C1;LPP;PHC3;MYSM1;ATXN1;ZNF717;ZNF678;CCSER1;BIRC6;KIAA0825;ANKRD36B;KDM7A
TCF7L1-IT1	24/100	0.02289331770290072	ANKRD36C;ANKRD26;MBD5;ANKRD36;KMT2C;DNAH14;RGPD6;ZBTB20;RC3H1;VPS13B;RGPD5;ADAM32;RGPD8;SLC9C1;MYSM1;PIAS2;KIAA1328;ZNF717;ZNF407;AGO2;WDPCP;ZNF678;BIRC6;ANKRD36B
RPS6KA2-IT1	24/100	0.02289331770290072	MACF1;MBD5;TRIO;WSB1;KMT2C;PDE4D;VPS13C;RGPD6;NEDD9;RGPD5;ZDHHC21;RGPD8;BTBD9;SNX30;PTPRE;AKAP13;DPY19L1;ATXN1;NUP210L;RPS6KA2;KCNQ3;ZNF678;EYS;XPR1
UFL1-AS1	24/100	0.02289331770290072	RFTN2;GRID2;GALNT13;DTNA;KCND2;HEPACAM;CADM2;LUZP2;CTNND2;NRXN1;KLHL32;GRIK4;ADCY2;FMN2;NPAS3;ADGRB3;CDH20;FUT9;PPP2R2B;DNER;NCAM1;APBA2;WASF3;GRIA4
PCDH9-AS4	24/100	0.02289331770290072	ANKRD36C;DOCK4;MBD5;PCDH9;ANKRD36;ANKRD30A;KMT2C;RGPD6;ZBTB20;RC3H1;VPS13B;RGPD5;ZDHHC21;RGPD8;PLEKHA3;LRP1B;DNM3;ATXN1;AGO2;WDPCP;ZNF678;BIRC6;DOCK1;ANKRD36B
SLC16A12-AS1	24/100	0.02289331770290072	CYFIP2;PRKN;CUBN;GALNT14;ENPEP;MGAM;PRKAA2;PAQR5;ARHGEF28;PLCL1;CRIM1;KCNJ15;GLYAT;LRP2;MYO9A;ARHGAP24;CNDP2;PKHD1;MSRA;SNX29;CLCN5;GIPC2;SLC16A9;SLC17A1
KCNMA1-AS1	24/100	0.02289331770290072	SVIL;RBFOX2;TPM1;PRICKLE2;NRXN3;ABCC9;CACNA1C;FOXN3;STON1-GTF2A1L;EML1;LPP;SLC8A1;FOXP2;FYCO1;INPP5A;SLMAP;KCNMA1;TSPAN2;PGM5;PPP1R12B;ASB2;PDZRN3;VCL;PRKG1
CADM2-AS1	24/100	0.02289331770290072	RFTN2;CRB1;GRID2;GALNT13;DSCAM;KCND2;CADM2;LUZP2;CTNND2;TCF12;PCDH15;LSAMP;GRIK4;MAPK8IP1;PHF21B;DNM3;MMP16;SNTG1;CDH20;DNER;FAT3;NCAM1;APBA2;GRIA4
ARHGAP31-AS1	24/100	0.02289331770290072	BBS2;RFTN2;ZNF462;ARNT2;NLGN1;HFM1;MAML2;TMEM178B;PPM1L;CTTNBP2;TCF12;RNF38;ZBTB20;PYGO1;PTPRD;IQCJ-SCHIP1;CCDC88A;ARHGAP31;TBC1D5;SPIRE1;SOX6;ASB3;WASF3;CREB5
ARHGEF26-AS1	24/100	0.02289331770290072	RFTN2;NTRK2;GALNT13;DTNA;HEPACAM;CADM2;LUZP2;CTNND2;NRXN1;TMOD2;KLHL32;LSAMP;GRIK4;ADCY2;FMN2;ADGRB3;CDH20;FUT9;PPP2R2B;CPE;NCAM1;WASF3;JAM2;ASTN1
SBF2-AS1	24/100	0.02289331770290072	PACRG;ACSS3;CUL5;PDE1C;ARHGEF28;FBXL17;PRKAG2;KLHL3;ELOVL7;SCAMP1;EPS8;MOB1B;TBC1D1;AP5M1;TMEM116;ARSJ;RCAN2;SLC16A7;SPIRE1;KIF21A;ERP27;THSD7A;RNF152;CNTNAP5
PPM1K-DT	24/100	0.02289331770290072	RFTN2;NTRK2;RTN1;DTNA;HEPACAM;LUZP2;CTNND2;TMOD2;KLHL32;LSAMP;GRIK4;ADCY2;FMN2;GABRG1;ETNPPL;CDH20;FUT9;PPP2R2B;LRIG1;CPE;NCAM1;SH3GL2;WASF3;JAM2
CPEB2-DT	24/100	0.02289331770290072	ZNF573;TBC1D19;ANKRD26;MBD5;MON2;ABCA5;ANKRD36;KMT2C;DNAH14;ZBTB20;VPS13B;LNPEP;PHC3;MYO9A;PIAS2;KIAA1328;ZNF717;ZNF407;ZNF449;WDFY3;ZNF236;KIAA0825;METTL15

			;ANKRD36B
SEMA6A-AS1	24/100	0.0228933177 0290072	OCA2;NLGN1;PHLPP1;MYEF2;MYO10;MICAL3;MYO5A;CABLES1;MITF;IGSF11;ITPKB;ZNF608;NRG3;ZNF280B;MXI1;ANKFY1;PHACTR1;SOX6;DIP2C;SRGAP2;JARID2;DISC1;MDGA2;SRGAP2B
MAST4-IT1	24/100	0.0228933177 0290072	DNAH11;MBD5;MON2;ANKRD36;ANKRD30A;KMT2C;VPS13C;DNAH14;MUC19;ZBTB20;RC3H1;VPS13B;LNPEP;ZDHHC21;SLC9C1;PHC3;FAM214A;LRP1B;ATXN1;ZNF717;TTC6;ZNF678;KIAA0825;ANKRD36B
EGFLAM-AS3	24/100	0.0228933177 0290072	ANKRD36C;NFAT5;ANKRD26;MBD5;ANKRD36;KMT2C;DNAH14;RGPD6;RC3H1;VPS13B;RGPD5;PLEKHA3;SLC9C1;LPP;ATXN1;ZNF717;ZNF407;APLF;WDPCP;CCSER1;BIRC6;KIAA0825;ANKRD36B;TNRC6B
TMEM108-AS1	24/100	0.0228933177 0290072	ANKRD36C;MBD5;ANKRD36;KMT2C;VPS13C;RGPD6;RC3H1;VPS13B;ZDHHC21;PLEKHA3;SLC9C1;LPP;PHC3;ATXN1;NUP210L;ZNF407;AGO2;KCNQ3;WDPCP;ZNF678;BIRC6;EVI5;KIAA0825;ANKRD36B
SLC25A48-AS1	24/100	0.0228933177 0290072	MED1;PATJ;ANKRD26;MBD5;MON2;ANKRD36;KMT2C;DNAH14;MRTFB;ZBTB20;RC3H1;VPS13B;LNPEP;ZDHHC21;SLC9C1;PHC3;ATXN1;ZNF717;ZNF407;ZNF678;BIRC6;CDK12;KIAA0825;ANKRD36B
MAGI2-AS1	24/100	0.0228933177 0290072	ANKRD36C;NFAT5;MBD5;MON2;ANKRD36;CHD9;KMT2C;VPS13C;RGPD6;ZBTB20;RC3H1;VPS13B;LNPEP;ZDHHC21;PLEKHA3;SLC9C1;LPP;PHC3;PTAR1;FER;ATXN1;ZNF717;KIAA0825;ANKRD36B
RERG-IT1	24/100	0.0228933177 0290072	VAV3;ARFGEF1;LYPLA1;CERS6;STAU2;ANKRD30A;LRBA;MRTFB;TBC1D9;GFRA1;AFF3;PRLR;ESR1;FAM214A;PBX1;RERG;INPP4B;TTC6;FAM241A;POTED;NEK10;APBB2;FSIP1;PCMTD1
HIF1A-AS3	24/100	0.0228933177 0290072	ANKRD36C;NFAT5;MBD5;MON2;ANKRD36;CHD9;KMT2C;VPS13C;FNDC3B;RC3H1;VPS13B;LNPEP;FAM126B;SLC9C1;PHC3;MYSM1;MYO9A;PTAR1;ATXN1;WDPCP;BIRC6;KIAA0825;ANKRD36B;PDK1
LINC02693	23/100	0.0415820517 61736336	ZNF287;SGTB;TMOD2;TOP3A;LSAMP;FAM219A;FMN2;NALCN;SNAP91;DNM3;CCDC88A;DPP6;MPRIP;MMP16;ADGRB3;SNTG1;SACS;ULK2;FAT3;NCAM1;APBA2;ASTN1;MAP4K4
LINC02656	23/100	0.0415820517 61736336	ANKRD36C;NFAT5;MBD5;MON2;ANKRD36;CHD9;ZNF160;KMT2C;VPS13C;ZBTB20;RC3H1;LNPEP;FAM126B;SLC9C1;PHC3;MYSM1;MYO9A;PTAR1;ATXN1;ZNF449;KIAA0825;ANKRD36B;RBM33
LINC00571	23/100	0.0415820517 61736336	TBC1D19;PACRG;ACSS3;STPG2;ARHGEF12;CUL5;FBXL17;KLHL3;ELOVL7;SCAMP1;EPS8;MOB1B;TBC1D1;AP5M1;AUH;TRIM2;SLC16A7;KIF21A;ERP27;THSD7A;RNF152;DGKI;CNTNAP5
LINC01266	23/100	0.0415820517 61736336	NFAT5;TBC1D19;ACSS3;STPG2;ARHGEF12;CUL5;PDE1A;FBXL17;ZBTB20;PTPRM;KLHL3;MYO9A;MOB1B;TBC1D1;FER;KIAA1328;SLC16A7;BBS9;THSD7A;CNTN4;UTRN;RNF152;DGKI
LINC00457	23/100	0.0415820517 61736336	RYR2;ZFHX3;CCDC186;MAGI3;KMT2C;LRBA;PBX3;RGPD6;ZBTB20;ARHGAP28;PHC3;FRMD3;POTEM;POTEH;NBEA;TTC6;NFIA;SNX25;PRR16;POTEG;UTRN;DGKI;XKR6
LINC01671	23/100	0.0415820517	CUBN;NRP1;GALNT14;ENPEP;EGLN3;VCAM1;PRKAA2;KSR1;ARHGEF28;INSR;ANXA4;COL23A1;CR

		61736336	IM1;ARHGAP24;SLC6A3;CNDP2;PKHD1;SNX29;CLCN5;PLIN2;ENPP3;ALPK2;TRABD2B
LINC01320	23/100	0.0415820517 61736336	CUBN;NRP1;GALNT14;ENPEP;EGLN3;VCAM1;ANKRD33B;PRKAA2;ARHGEF28;INSR;ANXA4;COL23A1;LRP2;MYO9A;SLC6A3;CNDP2;PKHD1;SNX29;CLCN5;PLIN2;ENPP3;ALPK2;TRABD2B
LINC01690	23/100	0.0415820517 61736336	RFTN2;CRB1;GRID2;GALNT13;PHLPP1;DSCAM;CADM2;LUZP2;CTNND2;TMOD2;TCF12;PCDH15;LSAMP;GRIK4;TRIM9;FCHSD2;ADGRB3;CDH20;NCAM1;FYN;DSCAML1;WASF3;GRIA4
LINC00362	23/100	0.0415820517 61736336	PATJ;LRBA;VPS13B;LDLRAD3;LNPEP;GFRA1;LDLRAD4;ESR1;FAM214A;PBX1;MED13L;TTC6;BMP2K;ZNF678;GAST;APBB2;BMPR1B;FSIP1;PRKACB;CPA6;FGF12;FBXL7;SGCG
LINC00327	23/100	0.0415820517 61736336	MYEF2;EYA1;MOK;MYO5A;MITF;FMN1;AKAP6;CORO2B;COL19A1;IGSF11;SDCBP;SGCD;GNG2;IFT81;SCFD2;GNG7;SACS;PRAME;HMCN1;SRGAP2;DISC1;CNIH3;SOX5
LINC02047	23/100	0.0415820517 61736336	RFTN2;NTRK2;GALNT13;PHLPP1;HEPACAM;CADM2;LUZP2;CTNND2;NRXN1;TMOD2;KLHL32;GRIK4;ADCY2;FMN2;NKAIN3;ADGRB3;CDH20;FUT9;PPP2R2B;NCAM1;KIF21B;WASF3;GRIA4
LINC00698	23/100	0.0415820517 61736336	PHLPP1;MYEF2;ST8SIA1;CADPS;PCDH15;KIAA1549L;LSAMP;MITF;FMN1;ADCY2;AKAP6;DOCK10;IGSF11;ITPKB;FRMD5;UBL3;NRG3;CHCHD6;RNF182;SPIRE1;PHACTR1;PRAME;CNIH3
LINC02060	23/100	0.0415820517 61736336	BBS2;RFTN2;DTNA;DSCAM;HEPACAM;CADM2;LUZP2;CTNND2;TMOD2;PCDH15;LSAMP;GRIK4;ADCY2;FMN2;IQCJ-SCHIP1;TRIM9;APC;CDH20;PPP2R2B;NCAM1;APBA2;JAM2;WASF3
LINC02735	23/100	0.0415820517 61736336	MINAR1;MYEF2;IGSF3;MYO10;ABCB5;MICAL3;MYO5A;MITF;FMN1;PARVB;NSG1;MED15;IGSF11;UBL3;SGCD;ABL2;PHACTR1;PRAME;HMCN1;DIP2C;SNX8;RXRG;SOX5
LINC02330	23/100	0.0415820517 61736336	MINAR1;MYEF2;STXBP1;MOK;MYO5A;MITF;FMN1;AKAP6;PARVB;LHFPL2;CORO2B;IGSF11;SDCBP;UBL3;SGCD;NRG3;SCFD2;CHCHD6;PRAME;HMCN1;SRGAP2;CNIH3;SOX5
LINC02296	23/100	0.0415820517 61736336	LINGO2;SLC24A3;PDE1C;BNC2;GALNT17;XYLT1;MTUS2;CACNA1C;SEL1L2;ANO4;PCP4;GRIN2A;TAFA4;MPRIP;HMCN2;SACS;SH3BP5;PGM5;SLIT2;ASB2;PDZRN3;FBXL7;JAZF1
LINC01581	23/100	0.0415820517 61736336	SVIL;BNC2;NEGR1;PCDH7;PRICKLE2;CACNA1C;STON1-GTF2A1L;EML1;LPP;FOXP2;SLMAP;KCNMA1;ABL1;ROR1;TSPAN2;PGM5;CTNNA3;PPP1R12B;ASB2;PDZRN3;VCL;PDZRN4;DDR2
LINC02188	23/100	0.0415820517 61736336	CUBN;NRP1;GALNT14;ENPEP;EGLN3;VCAM1;ANKRD33B;KSR1;ARHGEF28;INSR;ANXA4;COL23A1;CRIM1;PPP2R3A;SLC6A3;CNDP2;NFIB;GRB10;PLIN2;ENPP3;ALPK2;RSU1;TRABD2B
LINC01785	23/100	0.0415820517 61736336	RBFOX1;RTN1;SYT1;FRMPD4;MYT1L;SLC1A2;SLC4A10;DEUP1;SYN2;NOL4;CDH8;SNAP91;GRM3;CNKSR2;SYNPR;CTIF;AGBL4;DLG2;AMPH;GPC5;SCN2A;SLC12A8;RGS7
COL18A1-AS1	23/100	0.0415820517 61736336	CUBN;PATJ;TBC1D19;MBD5;PRKAA2;ANKRD36;PAQR5;STXBP4;ZBTB20;AXDND1;MYO9A;ARHGAP24;PKHD1;MSRA;SNX29;CLCN5;ZNF407;WDFY3;B

			IRC6;SLC17A1;KIAA0825;RNF152;ANKRD36B
BASP1-AS1	23/100	0.0415820517 61736336	*RBFOX1;RTN1;KCNC1;SGTB;MYO10;MYT1L;STXB P1;NRXN1;TMOD2;SLC4A10;OTUD7A;SYT16;MYO 5A;GRIN2B;SYN2;GABRG2;SNAP91;SYNJ1;ADGR B3;PHACTR1;SCN2A;CACNG2;SH3GL2*
HTR5A-AS1	23/100	0.0415820517 61736336	*RBFOX1;RTN1;SYT1;KCNC1;MYT1L;FRMPD4;SLC 1A2;SLC4A10;SYT16;ATP2B2;GRIN2B;SYN2;GA BRG2;SNAP91;GRM3;CNKSR2;KIAA0513;SV2B;S CN8A;TAFA1;SCN2A;ERC2;SH3GL2*
EGFR-AS1	23/100	0.0415820517 61736336	*ZNF462;DOCK4;NLGN1;EGLN3;KSR1;NEK6;TSHZ 2;NETO2;EGFR;CCDC88A;MMP16;SNTG1;SACS;F AT1;DPF3;MAPK1;FAT3;TCF4;PLIN2;ENPP3;AD AMTS9;ADGRL2;CREB5*
WARS2-IT1	23/100	0.0415820517 61736336	*RFTN2;CRB1;ARNT2;NTRK2;DTNA;KCND2;HEPAC AM;CTNND2;ZBTB20;ADCY2;FMN2;SIPA1L2;DCL K1;IQCJ- SCHIP1;CCDC88A;TRIM9;FRMD5;APC;NFIA;FEZ 2;FYN;ASB3;JAM2*
TGFA-IT1	23/100	0.0415820517 61736336	*PRELID2;DNAH11;MBD5;MON2;ANKRD36;CHD9;V PS13C;RC3H1;RORA;LNPEP;FAM126B;MYO9A;SY NE2;SLC6A3;PKHD1;PTAR1;ATXN1;WDFY3;BIRC 6;ALPK2;KIAA0825;ANKRD36B;PDK1*
TEX26-AS1	23/100	0.0415820517 61736336	*SH3GLB1;CEP112;TSHZ3;PTPRQ;EBF1;AFAP1;P RG4;GXYLT2;FBXL13;PLXDC2;ANTXR1;FSTL1;F ER;ATXN1;FLRT2;MDFIC;FEZ2;ZFPM2;RGL1;EV I5;TEAD1;FBN1;DDR2*
KCNMA1-AS2	23/100	0.0415820517 61736336	*MBD5;MON2;ANKRD36;ANKRD30A;KMT2C;ZBTB20 ;RC3H1;VPS13B;PLEKHA3;LPP;PHC3;LRP1B;AT XN3;ATXN1;KIAA1328;ZNF717;ZNF407;POTEG; RHPN2;ZNF236;KIAA0825;ANKRD36B;TNRC6B*
ADGRF5-AS1	23/100	0.0415820517 61736336	*ANKRD36C;NFAT5;DNAH11;MON2;MBD5;ANKRD36 ;CHD9;VPS13C;ERBIN;ZBTB20;RC3H1;VPS13B; ZDHHC21;FAM126B;CDC42BPA;SLC9C1;PHC3;FA M126A;RPS6KA3;PTAR1;ATXN1;KIAA0825;ANKR D36B*
LMCD1-AS1	23/100	0.0415820517 61736336	*RFTN2;ARNT2;NTRK2;DTNA;PHLPP1;PCDH9;HEP ACAM;CTNND2;NRXN1;MAGI2;TMOD2;KLHL32;LS AMP;GRIK4;ADCY2;FMN2;IQCJ- SCHIP1;APC;CDH20;PPP2R2B;NCAM1;ASB3;WAS F3*
ASIC4-AS1	23/100	0.0415820517 61736336	*RFTN2;GALNT13;PID1;DSCAM;CADM2;MEGF11;T CF12;GRIK4;LHFPL3;GRIK2;SEZ6L;TRIM9;ADG RB3;CDH20;SNTG1;SMOC1;DNER;TNR;NCAM1;CA CNG2;DSCAML1;UNC79;GRIA4*
SOX21-AS1	23/100	0.0415820517 61736336	*RFTN2;CRB1;NTRK2;GALNT13;PHLPP1;DSCAM;H EPACAM;CADM2;LUZP2;CTNND2;TCF12;LSAMP;G RIK4;FMN2;TRIM9;CDH20;FUT9;PPP2R2B;DNER ;NCAM1;APBA2;ASTN1;GRIA4*
NLGN1-AS1	23/100	0.0415820517 61736336	*ZNF462;DNAH11;DOCK4;MBD5;MON2;ANKRD36;S TXBP4;CHD9;TSHZ2;ZBTB20;VPS13B;FBXL13;M YO9A;PIAS2;PDE10A;ZNF407;WDPCP;WDFY3;FA T3;ALPK2;KIAA0825;ADAMTS9;ANKRD36B*
ASTN2-AS1	23/100	0.0415820517 61736336	*NFAT5;MBD5;MON2;STPG2;ANKRD36;KMT2C;PDE 4D;ZBTB20;VPS13B;LNPEP;LPP;PHC3;MOB1B;P OTEM;KIAA1328;POTEH;ZNF717;SLC16A7;POTE G;RNF152;DGKI;ANKRD36B;TNRC6B*
ATXN1-AS1	23/100	0.0415820517 61736336	*MAGI1;ACSS3;NDFIP1;ARHGEF12;TTC33;SDC2; BCKDHB;FBXL17;FNDC3A;MYRIP;LRRC2;PJA2;I TFG1;CDC14B;PARD3B;ATXN1;ZNRF3;ZMYND11;*

			PPARA;SCAPER;TEAD1;SNTB1;CPEB4
FGF12-AS1	23/100	0.0415820517 61736336	*UNC13C;NFAT5;ZNF462;MBD5;KMT2C;TSHZ2;RG PD6;ZBTB20;VPS13B;RGPD5;RGPD8;MOB1B;KIA A1328;ZNF717;ZNF407;SLC16A7;FAT3;CCSER1 ;BIRC6;FGF12;RNF152;DGKI;TNRC6B*
TRAF3IP2-AS1	23/100	0.0415820517 61736336	*RFTN2;PHLPP1;DSCAM;CADM2;CTNND2;TMOD2;T CF12;LSAMP;GRIK4;ZDHHC17;CCDC88A;TRIM9; RASSF2;FCHSD2;APC;ADGRB3;CDH20;FYN;NCAM 1;APBA2;ASB3;ASTN1;GRIA4*
GRM3-AS1	23/100	0.0415820517 61736336	*SH3GL3;RBFOX1;RTN1;MYT1L;TMOD2;KLHL32;S LC1A2;SLC4A10;OTUD7A;SYT16;GRIN2B;SYN2; SNAP91;NKAIN2;GRM3;KIAA0513;DLG2;PPP2R2 B;SCN2A;ERC2;SH3GL2;ANKS1B;RAPGEF4*
GPR158-AS1	23/100	0.0415820517 61736336	*GALNT13;CADM2;TMOD2;LSAMP;GRIK4;GRIK2;F MN2;NALCN;SNAP91;UNC80;SLC8A3;TRIM9;DPP 6;ADGRB3;DNER;TNR;NCAM1;LRRC4C;CACNG2;G PR158;UNC79;ASTN1;GRIA4*
DSCAM-IT1	23/100	0.0415820517 61736336	*RFTN2;CRB1;GRID2;GALNT13;DSCAM;CADM2;LU ZP2;TCF12;PCDH15;LSAMP;GRIK4;LHFPL3;GRI K2;CDH20;SMOC1;DNER;NCAM1;FYN;SOX6;CSMD 2;DSCAML1;APBA2;GRIA4*
RBMS3-AS1	23/100	0.0415820517 61736336	*ANKRD36C;NFAT5;DNAH11;MBD5;MON2;ANKRD36 ;CHD9;KMT2C;VPS13C;ZBTB20;RC3H1;VPS13B; ZDHHC21;PLEKHA3;SLC9C1;PHC3;PTAR1;FER;A TXN1;ZNF407;BIRC6;KIAA0825;ANKRD36B*
BARX1-DT	23/100	0.0415820517 61736336	*SVIL;ZFHX3;NRXN3;PRICKLE2;ABCC9;CACNA1C ;STON1- GTF2A1L;EML1;LPP;FOXP2;SMOC2;INPP5A;SLM AP;KCNMA1;PDE3A;TSPAN2;PGM5;CTNNA3;TACC 2;PPP1R12B;ASB2;VCL;PDZRN4*
STARD13-AS	23/100	0.0415820517 61736336	*NFAT5;MBD5;MON2;ANKRD36;KMT2C;VPS13C;DN AH14;RGPD6;ZBTB20;RC3H1;VPS13B;PLEKHA3; SLC9C1;PHC3;MYSM1;ATXN1;ZNF717;ZNF407;Z NF678;BIRC6;KIAA0825;ANKRD36B;TNRC6B*
MKLN1-AS	23/100	0.0415820517 61736336	*BBS2;NLGN1;MYEF2;SLC2A13;ZBTB20;PRKCA;S LC4A4;ARHGAP24;CDC14B;PARD3B;IGSF11;HAD HB;BCL2L13;IMMP2L;RANBP3L;CLCN5;UBL3;TB C1D5;VPS41;EXOC4;SPIRE1;WDFY3;SOX6*
EDRF1-AS1	23/100	0.0415820517 61736336	*USP24;SETD2;KMT2C;TUT4;MGA;RC3H1;VPS13B ;RGPD8;PRDM10;MYSM1;ARID1B;RGPD4;ELF2;B TAF1;KANSL1;RFX7;HECTD4;BIRC6;ZNF236;ZN F169;ANKRD36B;BPTF;TNRC6B*
KLF7-IT1	23/100	0.0415820517 61736336	*ANKRD36C;NFAT5;ANKRD26;MBD5;ANKRD36;CHD 9;KMT2C;VPS13C;ZBTB20;RC3H1;VPS13B;LNPE P;SLC9C1;PHC3;MYSM1;ATXN1;ZNF717;ZNF407 ;WDPCP;BIRC6;KIAA0825;ANKRD36B;TNRC6B*
SNCA-AS1	23/100	0.0415820517 61736336	*ARHGEF11;MYEF2;MYO10;SGTB;STXBP1;KIAA15 49L;MOK;MYO5A;MITF;FMN1;NSG1;LYST;IGSF1 1;SDCBP;UBL3;CHCHD6;ZNF280B;AKT3;ABL2;P HACTR1;PRAME;ZNF106;MDGA2*
FAM13A-AS1	23/100	0.0415820517 61736336	*NRP1;GALNT14;ENPEP;EGLN3;ARHGEF12;PRKAA 2;KSR1;ARHGEF28;INSR;COL23A1;CRIM1;LDB2 ;MYO9A;ARHGAP24;SLC6A3;CNDP2;EPS8;ARHGA P42;FCHO2;RAPGEF2;PLIN2;ENPP3;ALPK2*
NREP-AS1	23/100	0.0415820517 61736336	*UNC13C;NFAT5;STPG2;CUL5;PPM1L;ANKRD30A; PDE4D;ZBTB20;EBF2;GXYLT2;LRP1B;CDH7;MOB 1B;INPP4B;KIAA1328;ZNF717;SLC16A7;THSD7 A;KIAA0825;RNF152;DGKI;SGCG;CNTNAP5*
DLGAP2-AS1	23/100	0.0415820517	*TMEM132C;SHC3;DMRT1;PRKCB;CHD9;DCC;KIAA*

		61736336	*1549L;F13A1;EBF2;FOXN3;CDH8;HCRTR1;SRGAP2C;MOSMO;GRM7;SV2B;AKT3;KCNQ3;GAS2;ZNF385D;SRGAP2;B4GALT6;DLGAP2*
CD44-AS1	23/100	0.04158205176 1736336	*MAPKBP1;OCA2;IGSF3;MYO10;ABCB5;MYO5A;CABLES1;MITF;NSG1;LHFPL2;MCC;SDCBP;SGCD;MTHFD1L;KIF13A;ABL2;SNAI2;RGS20;RTTN;ZNF106;SNX8;CD44;KRT6A*
CCND2-AS1	23/100	0.04158205176 1736336	*BBS2;RFTN2;RIC3;GALNT13;DSCAM;CADM2;GRID1;CTNND2;NTRK3;GRIK4;FMN2;TRIM9;DPP6;ADGRB3;CDH20;DNER;IL1RAPL1;NCAM1;FYN;LRRC4C;DSCAML1;ASTN1;GRIA4*
CACNA1C-AS4	23/100	0.04158205176 1736336	*ANKRD36C;NFAT5;MBD5;ANKRD36;KMT2C;RGPD6;ZBTB20;RC3H1;VPS13B;RGPD5;PLEKHA3;SLC9C1;LPP;PHC3;MYSM1;ATXN1;ZNF717;ZNF407;WDPCP;BIRC6;KIAA0825;ANKRD36B;TNRC6B*
SEC23A-AS1	23/100	0.04158205176 1736336	*SVIL;TANGO6;RBFOX2;TSHZ3;AFAP1;ABCC9;CACNA1C;FOXN3;GNG12;EML1;STON1-GTF2A1L;FYCO1;SLMAP;NEDD4;EOGT;KCNMA1;PPP1R12B;ASB2;TEAD1;VCL;PRKG1;MBTPS2;DDR2*
KCNIP4-IT1	23/100	0.04158205176 1736336	*ANKRD26;MBD5;MON2;ANKRD36;ANKRD30A;KMT2C;MUC19;DNAH14;DNAH6;GREB1L;ZBTB20;RFX3;RC3H1;EFCAB6;SLC9C1;PHC3;DCDC1;TMEM232;ERBB4;NEK10;WDPCP;ZNF678;KIAA0825*
PTENP1-AS	23/100	0.04158205176 1736336	*PTPRN2;CADM2;ATL1;ELAVL4;LSAMP;NALCN;TXNDC16;MAPK8IP1;PHF21B;UNC80;SLC8A3;IGSF21;DPP6;ADGRB3;DNER;CNTN1;CPE;NCAM1;ASTN2;GPR158;UNC79;ASTN1;GARNL3*
NPTN-IT1	23/100	0.04158205176 1736336	*NFAT5;MBD5;ANKRD36;CHD9;KMT2C;VPS13C;MGA;RC3H1;VPS13B;FAM126B;PHC3;MYSM1;ARID1B;PIAS1;ATXN3;KANSL1;RFX7;CCDC192;BIRC6;ZNF236;ANKRD36B;BPTF;TNRC6B*

Table S6. The intersections among rDNA-contacting genes associated with different lincRNAs in K562 before (K562) and after induced differentiation (K562-diff.) Related to the Venn diagram presented in Figure 2A.

Names	**total**	**elements**
K562-K562-diff.	902	*FSTL1 TBC1D19 HPSE2 SLMAP FAM219A SAMD4A ERBB4 KCNMA1 PDE6A APBB2 LPP KLHL13 ANKRD36B RNF38 FYB2 CUBN MACF1 SLC17A1 FAM214A PAK1 PCMTD2 CTNND2 DNAH14 FRMD3 SLC6A11 SCAF8 COL22A1 ATP9B TRIO MITF ZNF385D TC2N RTN1 SETD2 KIRREL1 SLC15A5 AMBRA1 CHD9 SYNE2 EPN2 NETO2 PDE1C DOP1B ZNF208 TTC37 NUP210L TSPAN3 IGSF3 ALPK3 MYO3B EVC MED13L NRP1 TEAD1 NFIA FRY CDH13 ZNF718 MDGA2 RC3H1 RPS6KA5 POTED LHFPL2 EPS8 TANGO2 TAOK3 HERC2 ZSCAN30 LRFN5 ZNF66 OR4C46 ABL2 DIP2C PRKCB SLC23A2 ARHGEF7 UTRN PHACTR3 GPC5 ZNF704 MAML2 ARHGEF12 SAMD12 SLC8A1 LYPLA1 MAN2A2 DACH1 EML1 CMIP LNPEP PRR16 CDK12 SLC2A13 ANKRD6 RERG HTR2C ZNF397 KCNC1 DUX4 GALNT13 DYSF STAU2 NEK4 CACNA1E SIAH3 TMEM63C FYCO1 SNTG1 LPGAT1 CNTN4 CTIF TBC1D5 USP14 EXOC6B ST8SIA4 AFG3L2 CNKSR3 FRMD5 LDLRAD4 SEMA3A IQCM TRIM2 PLIN2 SLC8A3 DNAH6 RFX3 MGAT5 RBFOX1 STARD13 PCDH7 MMP16 SLC40A1 PHC3 LRRC4C CADM2 ALCAM MALRD1 USP24 CCSER1 ERLIN2 SLCO3A1 ATP11C PDZRN3 LIMD1 ADAM32 PIK3C3 MYEF2 DCLK1 DNAH11 SLC9C1 ADAMTS9 CDC42BPA ANKRD28 MAGI3 NIPBL CEP120 POTEG CDC42EP3 CHD6 HMCN1 FGD4 FAM135B FSIP1 GRIK2 SNX25 IGSF11 RGL1 CCDC186*

GSAP MBD5 MYO5C KIF16B NKAIN3 SDC2 NCAM1 SLC25A21 CLSTN2 TCF12 MARCHF6 SIPA1L2 CCNG2 RCAN2 KDM4B ADGRL2 GNG12 RGPD5 ODR4 TANC1 CORO2B PAPPA EVI5 NEBL ITGA8 SYCP1 VPS41 GRIK4 ZBTB20 MYO10 ZNF407 PJA2 ASB3 TCF4 TAFA4 NAALADL2 GABRG1 TSHZ2 TOM1L2 IREB2 PBX1 KIAA1549L FAM126B FAM171A1 ATP10A HECTD4 ELOVL7 PHACTR1 BICRAL TTC21B NEK6 ABCD2 SLC39A12 MOB1B COG2 ARHGAP28 DISC1 CLTCL1 SV2B HECW2 RIC3 FMN1 RALGPS1 ARHGAP42 PEAK1 EYA1 PHF21B KSR1 RORB PIEZO2 SLC35F1 KIAA1217 GPR158 ZNF236 GABRB1 SVIL ANKS1B TMEM241 NTM APBA2 TTC3 ASAP1 SGSM1 TTLL7 LYST FRMPD4 SLC16A9 COL23A1 LRRC2 EDAR PLEKHA3 ST8SIA1 ATP2B2 ANKRD26 FRMD6 RGS20 UNC79 CNDP2 FYN SH3KBP1 AGO2 NALCN CREBBP SLC1A2 ZBTB16 PRMT8 CADPS CSMD3 DLGAP1 FAM193A KIF21A LRBA B4GALT6 SLIT3 RGS7 FHIT SGTB GRIN2B ANTXR1 SHISAL1 SRGAP2 STK32A LRP1B ARSB GRIA1 OTUD7A TRABD2B TAFA5 NEGR1 SPRED1 AP5M1 MYO5A SPEN PLD5 NAV2 RABGAP1 FGF12 DGKB CACNG2 TSPAN33 PPP2R2C GARNL3 KANSL1 BTBD9 SPATA48 NPIPA1 TPM1 COL19A1 DPH6 EBF1 CRIM1 LRFN2 NOTCH2 FLNB MADD TOX CLDN10 PCDH15 ESR1 GABRG3 KIAA0232 FKBP5 NFAT5 SRGAP2C AQR ABCB5 TMOD2 PLCXD3 SLC44A5 FAM107B LUZP2 ZSWIM6 MEGF11 PDE4D TJP1 ARHGAP26 LRIG1 ERC2 PTPRT PRKACB GNG2 TRHDE PTPN4 RIMS1 GXYLT2 HIPK3 TRIM9 WSB1 TMEM225 FCHSD2 SGMS1 PARVB LAMA1 JCAD GLI3 GOLGA8S DOCK4 MAST4 GAST ITPR2 BRINP1 WDR26 NRXN1 FRMD4A SUPT16H NTRK3 BCL2L13 JAZF1 SGCG FBN1 WWOX NELL2 WASF3 LONP2 ARID1B MTUS1 HYDIN TRAPPC10 TSPAN2 CPQ WDPCP MAGI1 PRRC1 AUH MOSMO RAPGEF4 EHBP1 CNKSR2 NEK10 ZNF74 ANKRD31 PIAS1 SNX29 CDH20 ST6GALNAC3 ZNF521 PBX3 PTAR1 PRICKLE2 PCNX1 GALNT10 DPP6 LSAMP PRELID2 HMGA2 HHAT CTTNBP2 KLHL32 FHOD3 GRID1 GREB1L PARP8 ZNF287 CREB5 TNRC6B RERE CACNA2D3 SEL1L ZNF608 SLC4A10 PHLPP1 SYN2 ATL1 MYO1E SLC7A2 ZDHHC17 PKN2 ITGA4 ABCC9 CPA6 HFM1 GSG1L ACSS3 ROCK1 HERC1 CFAP70 DCDC1 DOCK1 CNTN3 CACNA1C MGAM GLIS1 ARHGAP31 UBR1 RXRG ETNPPL PRKAA2 ARHGEF11 AMPH CCSER2 RGPD4 TMEM178B SORCS1 COL4A2 DNM3 PACRG SYT1 BBS2 GRB10 ARHGAP32 SLC27A6 ASXL3 PRKN DPF3 MUC19 FOXP2 TRPM7 SCAPER EDIL3 SIAH2 LATS2 EXOC4 DOCK9 DLG2 NOL4 PPP1R12B SACS SCFD2 RORA PTPRD CDC14B GIPC2 CDYL2 LRRTM4 TTR BBS9 PTPRN2 RANBP3L TLN2 TG HDAC4 ADGRB3 ADAM29 INPP4B DGKG ZNF717 MYO9A MYO3A FOXN3 NTRK2 KIAA0513 PLCB1 HIVEP2 MAPK1 LAMB1 SDCBP ATP9A BPTF TASOR2 WDFY3 GRIK1 CUL5 SOX5 PRKG1 DSCAM BIRC6 DGKI PLXDC2 UBL3 NFIB DIP2B TUT4 NLK THSD7A SPOP NBEA EGFR PPFIA2 POTEC STXBP6 PTPRQ MGA MXI1 AFAP1 NCAM2 CLCN5 BCR TTC28 MAGI2 SLC49A4 NELL1 AKAP6 LARGE1 ANKRD30B ANKRD36C TRAPPC8 MBNL1 RTTN STX12 CSMD2 FANCM ARHGEF28 PLCL1 MELTF FUT9 GALNTL6 MYT1L TMPRSS3 SRGAP2B MOK PXDNL ANKFY1 TBC1D1 SLC37A2 IQCJ-SCHIP1 SORCS3 PDP2 SLC12A1 LRRC49 SCN2A ERP27 RNF152 POTEB3 CNTN1 ZNRF3 POU6F2 GNAQ ZNF449 AGL DOCK10 TENM3 OPCML ITPKB GRM5 MED1 MTMR7 GNPTAB ENPEP EPHA6 GLIS3 FNDC3A CA10 SPIRE1 PHACTR2 ANKRD36 RPRD1A ARAP2 AIMP1 LDB2 NECAB1 COL14A1 WDR72 SNX30 NRG3 CPEB4 ATP8A1 PID1 NLGN1 ABL1 PTPRG NCOR1 JARID2 PIGN PRDM10 PAQR5 OR9Q1 EBF2 JAM2 MICAL3 GRID2 ELMO1 FAM241A LRRC7 LRP2 RANBP17 ERBIN PRSS23 SEMA6D PCMTD1 PPM1L CABIN1 ZNF573 MBTPS2 KHDC4 SMOC1 FER PAK5 PDZRN4 SETDB2 MON2 TMEM116 RYR2 SCAMP1 ELF2 IL17RA LDLRAD3 FBXL17 MCC GLYAT SUSD4 GALNT14 PRLR ZNF160 ZNF280B HADHB NFATC2 DST FAT3 GRIK3 CACNB2 STPG2 STXBP4 PDXDC1 NTNG1 MED15 MTPN EFCAB6 VSTM2A GNG7 MTMR2 KCNH5 FBXL7 LRP12 MAPRE2 LRRC8B FGF10 ZNF169 KIF13A FAM189A2 NOS1AP SOX6 CADM1 POTEM SGCD RC3H2 TCERG1L PDE4DIP MSRA SYNPR RIC8B PCDH9 MPDZ YLPM1 TRPM3 ATF6 EYS SP3 ITFG1 IPO11 STK32B VCL ZNF106 SEZ6L ZDHHC21 XKR6 POTEB2 CNTNAP5 VCAM1 POTEH RAPGEF2 RGS12 CDH7 IFT81 SHANK2 ZMYND11 RAPGEF5 INSR SRGAP3 PDK1 AKAP13 UNC80 WDR41 ILDR2 IMMP2L MIPOL1 PPIP5K2 SYNJ1 CHCHD6 KLF15 TTC6 PPP2R2B DENND4C UNC5D ATXN1 KDM1B GABRG2 ARFGEF1 FAT1 PATJ ITGA9 ENPP1 ULK2 KIAA1328 UNC13C TANGO6 ZNF462 NRXN3 RIMS2 RHPN2

		ANKRD30A PPM1F KCNQ3 ANKRD33B SCN8A ZFHX3 DENND2B SNX8 HS6ST3 EGLN3 CHSY3 PGM5 FNDC3B ASTN1 DLGAP2 GFRA1 ATRNL1 SPHKAP GPR156 BMPR1B NSG1 RGPD8 MAPKBP1 CPE KCND2 FCRLA SEMA5A CABLES1 ATP8A2 GOLGA8T SLC24A3 KITLG PYGO1 SV2C LHFPL3 MPRIP ARHGAP24 FREM1 GRIA4 GSE1 MAP4K4 EFR3A CERS6 CNIH3 DOCK3 KIF21B CTNNA2 PRAME ANKRD18A APC APLF GPC6 PARD3B DNER ABCA5 MARCHF1 RFX7 ADGRV1 RELN MACROD2 AKAP11 VPS13C HS3ST4 BNC2 ANXA4 TTC33 EOGT KCNJ15 CEP112 NAT1 POTEB CYBRD1 AUTS2 TBC1D9 ROR1 PPP2R3A FAM81A MTMR3 STON1- GTF2A1L BMP2K SNAI2 CYFIP2 SLC4A4 KAZN ADAMTSL1 CCDC126 SYT16 NDFIP1 TNR MSANTD4 PTPN13 DTNA SNAP91 OCA2 CELF4 AKT3 ST8SIA6 CRB1 VAV3 IL1R1 BCAS3 MSANTD2 FCHO2 RFTN2 NPAS3 PRKCA HEPACAM KMT2C INPP5A USP8 USH1C MRTFB DNAH5 ZNF678 CNTN6 KCNS3 ENPP3 FMN2 ERC1 RGPD6 APP CHST3 PDLIM5 RPS6KA3 XYLT1 KIAA0825 BTAF1 SMAD5 SLC6A3 DNAJC13 NYAP2 PSD3 VPS13B ALPK2 ABCA13 ASB2 EYA2 MAPK8IP1 ADGRB1 CCDC88A GHRH ARNT2 RAP1GDS1 AFF3 SPOCK1
K562	374	*MAP4 PKNOX2 ZHX3 TSPAN11 HIVEP1 ATRX OR1L6 NBN PRTG ADAMTS18 SEC24D MPPED2 KMT2E EPB41L4A PELI2 MYO9B PWWP3A ITIH5 PACSIN2 SEC23B ZEB1 FAT4 PARN SLC15A2 TRIM23 WSCD1 FBXW8 ZFYVE1 DIP2A SFPQ MAB21L3 HOOK3 GPR137B ROCK2 ACACA C1QL3 POU1F1 TSPAN13 CCDC141 YTHDF3 SPATA17 SYT10 ZBTB38 PAFAH1B1 HECTD2 GON4L GREB1 ZNF648 USP49 ARFGEF3 FAM167B BCL2 KL MYO5B PPP1R9A RAP1GAP SPOPL SLC13A4 ZZEF1 FRA10AC1 ZFAND4 APMAP SHOC1 INO80D KDM5A NRIP1 ZNF382 GOLGA6D NDUFAF6 ITGA1 ITSN2 GDAP1L1 HIRA UFL1 EPHA4 TTLL11 DIDO1 COL4A3 ADAMTS2 PRKAA1 RASGEF1C FRYL PBLD ABCC4 MYT1 ASH1L SORBS2 PIK3R3 MEGF10 OPA3 ZC3HAV1 TMEM25 RAB38 ANKRD20A1 ZNF891 VMP1 SLC25A18 RALGAPA2 VSTM4 ADAMTS19 RAB27B CTSB MORC3 NDRG2 NSD1 NEDD4L PLS1 HDGFL3 ANK2 ABCC12 DSTYK LPCAT2 XRCC4 BZW1 FBXL20 MAP7 POTEJ ZNF518A PHC2 DCAF1 NSG2 CD2AP RGS8 KALRN ZNF124 KIAA0319L BMP7 KIAA0753 ANKRD17 LINGO1 TNKS SMPDL3A OR2T2 IMPA2 SCAI ZFP90 TULP4 S100B LTN1 ARHGAP12 KLF12 KCNN3 TINAG DIRAS2 FLI1 ANAPC1 KCNAB1 KLHL4 MTMR10 CDHR3 ITGB8 PRUNE2 POR CDH11 SETBP1 AIF1L CDS2 ZNF780B RBPMS2 LRRC9 ATP6V1E1 SLC37A1 PNPLA8 DTWD2 LMX1A RSPH3 KHDRBS2 VPS13D ZNF292 SPIN1 SNTB2 KPNA1 FUT8 ADCYAP1R1 LAMC1 ZNF611 SRP9 EPHB1 MYOCD TRIM58 GOLGA8J ZMYM1 UBE2QL1 UBAP1L PLPPR5 AVL9 FER1L6 ZNF33B PTCD2 HLCS STK10 GAPVD1 INTS7 SOGA1 UHRF1BP1L FLT1 ADSS2 RB1CC1 IKBIP NPHP4 FOXJ3 PDE2A CBLIF IL17RD ATP6V1B2 KCNJ1 SLC5A12 NCS1 TRPC5 ENTHD1 AMFR USP31 PLCB4 LOXL2 LCLAT1 FTO SLC6A1 CDH9 EPC2 GOLGA6B ADAM28 CYP4Z1 FGF9 ACSM2A TRAPPC11 NIN SLC1A1 HPCAL1 RAB3GAP2 LIMCH1 CMPK1 BAZ2B EML6 CRACD BAZ2A MEOX2 DDX6 CTSE TRPM1 CACNG3 PLEKHB2 IPCEF1 COPS8 AKAP9 PRKD1 PLCZ1 RBM47 SHROOM3 FBXO41 MSI2 ETS1 SYNE1 RALGPS2 SNRK HRH1 RABEP1 ST6GAL2 TOGARAM1 PTCHD4 SLX4IP PKHD1L1 ALKAL2 PLPPR1 MAP2 CEP192 TGFA ZFYVE26 GOLGA8F DHX29 PTPRA NUMB TNRC6C CELF2 CD70 TM9SF2 DEFB108B WSCD2 ZNF606 ESYT2 ZNF804B CAPN5 MLLT10 CSNK1G1 GOLGA6C KLHL29 ABCA4 SMTN PLEKHA2 SCG3 ZMYM4 DIPK1A DEPTOR VCAN ATAT1 RBMS3 TM9SF3 DDHD1 ICA1 SRFBP1 MATN2 RGS6 CRACR2A ZNF615 ATP6V0D2 PHF20L1 ZNF431 IARS2 S100PBP CELSR2 CFAP97 PTPRJ TET1 CATSPER2 RALGAPA1 LMX1B RRAGD SHLD2 ZMAT4 MARCHF8 CLIP1 SHC4 ELP2 ZNF613 UST TLL1 CALD1 PRDM15 UBE3A TYW1 HSF5 AGAP1 ADAM22 ZNF112 HTR2A TPH2 NCOA7 GALNT1 CHN1 GATAD2B TRPS1 INO80 SLC14A1 MFSD9 RANBP2 STRN CRISPLD2 EIPR1 CHCHD2 CLDN18 ADCY9 SLC25A48 GEMIN5 ANO6 KTN1 ERCC6L2 RUFY2 OR4K2 SUSD1 HIPK1 KCNE4 CLIC6 ACSM2B HSPA12A TTC7B PEPD BRWD1 AGO3 CNOT6L MEF2C TRAPPC6B ZNHIT6 ACTR3C MYB SLC39A6*
K562-diff.	158	*ST8SIA5 CD44 RPTOR TACC2 DMRT1 MDFIC HCN1 LRMDA TOP3A PTPRE SLC12A8 ARPP21 AGBL4 TRIM43B DSCAML1 CECR2 SLC16A7 NEDD4 RBM33 VAT1L SH3GLB1 THRB DPYD BACE2 LRRC69 IL6R PKHD1 CCDC18 CDH8 METTL15 RSU1 MAP3K7CL RNF182 ZFPM2 TMEM132C CDH18 AKAP10 DEUP1*

		SPOCK3 GALNT17 PDGFD HCRTR1 SH3GL3 ASTN2 BRINP3 TANC2 DPYSL5 PPFIBP1 ATXN3 PAK3 PSIP1 AXDND1 SEL1L2 GABRA2 SPECC1 YPEL1 PDE3A ZNF536 MORC1 SLC24A2 COL25A1 GRIN2A PCNX2 PRKAG2 MCTP2 SHC3 CCDC192 IL1RAPL1 TXNDC16 CTNNA3 KRT6A BMPER PDE1A FGF14 ANGPT1 RPH3A RPS6KA2 MVB12B PLXNA4 IGSF21 TBATA SMOC2 XPR1 PRKCE MTUS2 GRM3 FAM126A OR4F15 PPARA F13A1 ANO4 PIAS2 TAFA1 PRG4 KDM7A LYN NUBPL ELAVL4 MYSM1 TBC1D30 SH3BP5 TIAM2 TSHZ3 LINGO2 RASSF2 OSBPL1A ZNF367 CBWD3 SLC24A4 MTHFD1L NTF3 RNF111 CFTR TBX20 FLRT2 GAS2 PDE10A RBFOX2 BRINP2 ACER2 TMEM108 ZSWIM5 GABRB3 GRM7 NKAIN2 BACH1 RASAL2 PTPRM NEDD9 KIRREL3 MYRIP PCP4 STXBP1 ADCY2 ANK3 TMEM232 TMEM132B SNTB1 SH3GL2 DDR2 DCC TMEM132D HMCN2 FEZ2 SLIT2 ANKRD7 SNAPC3 MINAR1 FBXO32 KLHL3 FAM180A LHX9 FBXL13 ADARB2 ARSJ DPY19L1 BCKDHB MCTP1

Table S7. GO associations with biological processes associated with 902 overlapping rDNA-contacting genes that are associated with lincRNAs in both K562 and K562-diff. cells. The search was performed using g:Profiler (https://biit.cs.ut.ee/gprofiler/gost). Related to Figure 2B.

GO.ID	Description	padj	Genes
GO:0048731	system development	2.85862782 76344312e-36	*ERBB4,PDE6A,RNF38,MACF1,PAK1,CTNND2,TRIO,MITF,RTN1,SETD2,AMBRA1,SYNE2,EPN2,IGSF3,ALPK3,EVC,NRP1,NFIA,FRY,CDH13,MDGA2,RC3H1,RPS6KA5,TAOK3,LRFN5,ABL2,PRKCB,SLC23A2,ARHGEF7,SLC8A1,EML1,KCNC1,STAU2,CNTN4,ST8SIA4,AFG3L2,SEMA3A,SLC8A3,RFX3,RBFOX1,STARD13,MMP16,SLC40A1,LRRC4C,CADM2,ALCAM,ADAM32,MYEF2,DCLK1,DNAH11,ADAMTS9,NIPBL,CEP120,MBD5,SDC2,NCAM1,CLSTN2,TCF12,KDM4B,ADGRL2,NEBL,ITGA8,TCF4,PBX1,PHACTR1,TTC21B,ABCD2,SLC39A12,DISC1,HECW2,FMN1,EYA1,RORB,KIAA1217,GABRB1,NTM,APBA2,ASAP1,TTLL7,EDAR,ATP2B2,FYN,AGO2,SLC1A2,ZBTB16,CSMD3,B4GALT6,SLIT3,GRIN2B,ANTXR1,SRGAP2,ARSB,GRIA1,TAFA5,NEGR1,SPRED1,SPEN,NAV2,FGF12,TPM1,COL19A1,CRIM1,NOTCH2,TOX,PCDH15,ESR1,SRGAP2C,ABCB5,TMOD2,ZSWIM6,MEGF11,TJP1,ARHGAP26,LRIG1,PRKACB,RIMS1,LAMA1,JCAD,GLI3,BRINP1,NRXN1,NTRK3,SGCG,FBN1,WWOX,WASF3,ARID1B,HYDIN,TSPAN2,WDPCP,MOSMO,ZNF521,PBX3,LSAMP,HMGA2,FHOD3,GREB1L,RERE,SLC4A10,PHLPP1,ATL1,MYO1E,ZDHHC17,ITGA4,ROCK1,HERC1,CACNA1C,COL4A2,DNM3,SYT1,BBS2,ARHGAP32,PRKN,DPF3,FOXP2,SCAPER,RORA,PTPRD,RANBP3L,TG,HDAC4,ADGRB3,ADAM29,DGKG,MYO9A,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,ATP9A,BPTF,GRIK1,SOX5,PRKG1,DSCAM,NFIB,DIP2B,THSD7A,EGFR,PPFIA2,PTPRQ,NCAM2,BCR,MAGI2,NELL1,AKAP6,LARGE1,MBNL1,ARHGEF28,FUT9,MYT1L,SRGAP2B,SCN2A,CNTN1,POU6F2,DOCK10,TENM3,OPCML,GRM5,MED1,ENPEP,EPHA6,FNDC3A,CA10,AIMP1,LDB2,NRG3,NLGN1,ABL1,PTPRG,JARID2,JAM2,GRID2,LRP2,SEMA6D,MBTPS2,*

			SMOC1,FER,SETDB2,RYR2,FBXL17,PRLR,NFATC2,FAT3,NTNG1,MTPN,MTMR2,LRP12,FGF10,SOX6,CADM1,SGCD,RC3H2,PCDH9,ATF6,SP3,VCL,SEZ6L,VCAM1,RAPGEF2,SHANK2,RAPGEF5,INSR,AKAP13,IMMP2L,SYNJ1,KLF15,UNC5D,ATXN1,GABRG2,FAT1,ULK2,NRXN3,RIMS2,KCNQ3,SCN8A,ZFHX3,ASTN1,GFRA1,BMPR1B,CPE,SEMA5A,CABLES1,ATP8A2,KITLG,PYGO1,ARHGAP24,FREM1,MAP4K4,CTNNA2,APC,APLF,DNER,ADGRV1,RELN,MACROD2,BNC2,AUTS2,ROR1,PPP2R3A,SNAI2,CYFIP2,ADAMTSL1,NDFIP1,TNR,PTPN13,CELF4,AKT3,CRB1,VAV3,BCAS3,PRKCA,USH1C,DNAH5,CNTN6,APP,PDLIM5,RPS6KA3,XYLT1,SMAD5,SLC6A3,NYAP2,VPS13B,ALPK2,ASB2,ADGRB1,CCDC88A,GHRH,ARNT2,SPOCK1
GO:0007275	multicellular organism development	1.9452001975456464e-33	*ERBB4,PDE6A,RNF38,MACF1,PAK1,CTNND2,TRIO,MITF,RTN1,SETD2,AMBRA1,SYNE2,EPN2,DOP1B,IGSF3,ALPK3,MYO3B,EVC,NRP1,TEAD1,NFIA,FRY,CDH13,MDGA2,RC3H1,RPS6KA5,LHFPL2,TAOK3,LRFN5,ABL2,PRKCB,SLC23A2,ARHGEF7,SLC8A1,DACH1,EML1,CMIP,KCNC1,STAU2,SIAH3,CNTN4,ST8SIA4,AFG3L2,SEMA3A,SLC8A3,RFX3,RBFOX1,STARD13,MMP16,SLC40A1,LRRC4C,CADM2,ALCAM,ATP11C,ADAM32,MYEF2,DCLK1,DNAH11,ADAMTS9,NIPBL,CEP120,MBD5,KIF16B,SDC2,NCAM1,CLSTN2,TCF12,KDM4B,ADGRL2,NEBL,ITGA8,TCF4,IREB2,PBX1,PHACTR1,TTC21B,ABCD2,SLC39A12,DISC1,HECW2,FMN1,EYA1,RORB,KIAA1217,GABRB1,NTM,APBA2,ASAP1,TTLL7,EDAR,ATP2B2,FYN,AGO2,CREBBP,SLC1A2,ZBTB16,CSMD3,B4GALT6,SLIT3,GRIN2B,ANTXR1,SRGAP2,ARSB,GRIA1,TAFA5,NEGR1,SPRED1,SPEN,NAV2,FGF12,TPM1,COL19A1,CRIM1,NOTCH2,TOX,PCDH15,ESR1,SRGAP2C,ABCB5,TMOD2,ZSWIM6,MEGF11,TJP1,ARHGAP26,LRIG1,PRKACB,RIMS1,LAMA1,JCAD,GLI3,BRINP1,NRXN1,NTRK3,SGCG,FBN1,WWOX,WASF3,ARID1B,HYDIN,TSPAN2,WDPCP,MOSMO,ZNF521,PBX3,LSAMP,HMGA2,FHOD3,GREB1L,RERE,SLC4A10,PHLPP1,ATL1,MYO1E,ZDHHC17,ITGA4,ROCK1,HERC1,CACNA1C,COL4A2,DNM3,SYT1,BBS2,ARHGAP32,PRKN,DPF3,FOXP2,SCAPER,SIAH2,LATS2,EXOC4,RORA,PTPRD,RANBP3L,TG,HDAC4,ADGRB3,ADAM29,DGKG,MYO9A,MYO3A,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,ATP9A,BPTF,GRIK1,SOX5,PRKG1,DSCAM,BIRC6,NFIB,DIP2B,THSD7A,EGFR,PPFIA2,PTPRQ,NCAM2,BCR,MAGI2,NELL1,AKAP6,LARGE1,MBNL1,RTTN,ARHGEF28,FUT9,MYT1L,SRGAP2B,SCN2A,CNTN1,ZNRF3,POU6F2,DOCK10,TENM3,OPCML,ITPKB,GRM5,MED1,ENPEP,EPHA6,FNDC3A,CA10,AIMP1,LDB2,NECAB1,NRG3,NLGN1,ABL1,PTPRG,JARID2,JAM2,GRID2,LRP2,SEMA6D,MBTPS2,SMOC1,FER,SETDB2,RYR2,FBXL17,PRLR,NFATC2,FAT3,NTNG1,MTPN,MTMR2,LRP12,FGF10,SOX6,CADM1,SGCD,RC3H2,PCDH9,ATF6,SP3,VCL,SEZ6L,ZDHHC21,VCAM1,*

			RAPGEF2,SHANK2,RAPGEF5,INSR,AKAP13,IMMP2L,SYNJ1,KLF15,UNC5D,ATXN1,GABRG2,FAT1,ENPP1,ULK2,NRXN3,RIMS2,KCNQ3,SCN8A,ZFHX3,ASTN1,GFRA1,BMPR1B,CPE,SEMA5A,CABLES1,ATP8A2,KITLG,PYGO1,ARHGAP24,FREM1,MAP4K4,CTNNA2,APC,APLF,DNER,ADGRV1,RELN,MACROD2,BNC2,AUTS2,ROR1,PPP2R3A,BMP2K,SNAI2,CYFIP2,ADAMTSL1,NDFIP1,TNR,PTPN13,CELF4,AKT3,ST8SIA6,CRB1,VAV3,BCAS3,PRKCA,USH1C,DNAH5,CNTN6,APP,PDLIM5,RPS6KA3,XYLT1,SMAD5,SLC6A3,NYAP2,VPS13B,ALPK2,ASB2,EYA2,ADGRB1,CCDC88A,GHRH,ARNT2,AFF3,SPOCK1
GO:0007399	nervous system development	2.0385723718164833e-33	*ERBB4,MACF1,PAK1,CTNND2,TRIO,RTN1,SETD2,AMBRA1,SYNE2,NRP1,NFIA,FRY,MDGA2,RPS6KA5,TAOK3,LRFN5,ABL2,SLC23A2,ARHGEF7,EML1,KCNC1,STAU2,CNTN4,ST8SIA4,AFG3L2,SEMA3A,SLC8A3,RBFOX1,LRRC4C,CADM2,ALCAM,MYEF2,DCLK1,DNAH11,NIPBL,CEP120,MBD5,SDC2,NCAM1,CLSTN2,TCF12,KDM4B,ADGRL2,ITGA8,TCF4,PBX1,PHACTR1,TTC21B,ABCD2,SLC39A12,DISC1,HECW2,EYA1,RORB,GABRB1,NTM,APBA2,ASAP1,TTLL7,ATP2B2,FYN,SLC1A2,ZBTB16,CSMD3,B4GALT6,SLIT3,GRIN2B,SRGAP2,ARSB,GRIA1,NEGR1,SPEN,NAV2,FGF12,CRIM1,NOTCH2,TOX,PCDH15,SRGAP2C,TMOD2,ZSWIM6,ARHGAP26,LRIG1,PRKACB,RIMS1,LAMA1,GLI3,BRINP1,NRXN1,NTRK3,WASF3,ARID1B,HYDIN,TSPAN2,WDPCP,MOSMO,ZNF521,PBX3,LSAMP,RERE,SLC4A10,ATL1,ZDHHC17,ITGA4,ROCK1,HERC1,DNM3,SYT1,BBS2,ARHGAP32,PRKN,DPF3,FOXP2,RORA,PTPRD,TG,HDAC4,ADGRB3,DGKG,MYO9A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,ATP9A,BPTF,GRIK1,SOX5,PRKG1,DSCAM,NFIB,DIP2B,EGFR,PPFIA2,PTPRQ,NCAM2,BCR,MAGI2,NELL1,LARGE1,MBNL1,ARHGEF28,FUT9,MYT1L,SRGAP2B,SCN2A,CNTN1,POU6F2,DOCK10,TENM3,OPCML,GRM5,MED1,EPHA6,CA10,LDB2,NRG3,NLGN1,ABL1,PTPRG,JARID2,JAM2,GRID2,LRP2,SEMA6D,FBXL17,FAT3,NTNG1,MTPN,MTMR2,LRP12,FGF10,SOX6,PCDH9,VCL,SEZ6L,VCAM1,RAPGEF2,SHANK2,RAPGEF5,IMMP2L,SYNJ1,KLF15,UNC5D,ATXN1,GABRG2,ULK2,NRXN3,RIMS2,KCNQ3,SCN8A,ZFHX3,ASTN1,GFRA1,BMPR1B,SEMA5A,CABLES1,ATP8A2,MAP4K4,CTNNA2,APC,DNER,ADGRV1,RELN,MACROD2,AUTS2,ROR1,PPP2R3A,CYFIP2,ADAMTSL1,TNR,PTPN13,AKT3,CRB1,USH1C,DNAH5,CNTN6,APP,PDLIM5,RPS6KA3,SLC6A3,NYAP2,VPS13B,ADGRB1,CCDC88A,GHRH,ARNT2,SPOCK1*
GO:0048856	anatomical structure development	2.1079684661783256e-29	*FSTL1,ERBB4,PDE6A,RNF38,MACF1,PAK1,CTNND2,TRIO,MITF,RTN1,SETD2,AMBRA1,SYNE2,EPN2,DOP1B,IGSF3,ALPK3,MYO3B,EVC,NRP1,TEAD1,NFIA,FRY,CDH13,MDGA2,RC3H1,RPS6KA5,LHFPL2,EPS8,TAOK3,LRFN5,ABL2,PRKCB,SLC23A2,ARHGEF7,UTRN,SLC8A1,DACH1,EML1,CMIP,ANKRD6,KCNC1,STAU2,SIAH3,CNTN4,ST8SIA4,AFG3L2,LDLRAD4,SEMA3A,S*

			LC8A3,RFX3,RBFOX1,STARD13,MMP16,SLC40 A1,LRRC4C,CADM2,ALCAM,ATP11C,LIMD1,AD AM32,MYEF2,DCLK1,DNAH11,ADAMTS9,NIPBL ,CEP120,CDC42EP3,FGD4,MBD5,KIF16B,SDC 2,NCAM1,CLSTN2,TCF12,KDM4B,ADGRL2,TAN C1,NEBL,ITGA8,SYCP1,MYO10,TCF4,IREB2, PBX1,FAM171A1,ATP10A,PHACTR1,TTC21B,A BCD2,SLC39A12,DISC1,CLTCL1,HECW2,FMN1 ,EYA1,RORB,KIAA1217,GABRB1,SVIL,NTM,A PBA2,ASAP1,TTLL7,EDAR,ATP2B2,FRMD6,FY N,SH3KBP1,AGO2,CREBBP,SLC1A2,ZBTB16,C SMD3,B4GALT6,SLIT3,GRIN2B,ANTXR1,SRGA P2,ARSB,GRIA1,TAFA5,NEGR1,SPRED1,SPEN ,NAV2,FGF12,TPM1,COL19A1,CRIM1,NOTCH2 ,FLNB,TOX,PCDH15,ESR1,SRGAP2C,ABCB5,T MOD2,ZSWIM6,MEGF11,PDE4D,TJP1,ARHGAP2 6,LRIG1,PRKACB,RIMS1,PARVB,LAMA1,JCAD ,GLI3,BRINP1,NRXN1,NTRK3,SGCG,FBN1,WW OX,WASF3,ARID1B,HYDIN,TSPAN2,CPQ,WDPC P,MOSMO,PIAS1,CDH20,ZNF521,PBX3,PRICK LE2,LSAMP,HMGA2,FHOD3,GREB1L,RERE,SLC 4A10,PHLPP1,ATL1,MYO1E,ZDHHC17,ITGA4, ROCK1,HERC1,DOCK1,CACNA1C,RXRG,COL4A2 ,DNM3,PACRG,SYT1,BBS2,ARHGAP32,ASXL3, PRKN,DPF3,FOXP2,SCAPER,SIAH2,LATS2,EX OC4,RORA,PTPRD,RANBP3L,TG,HDAC4,ADGRB 3,ADAM29,DGKG,MYO9A,MYO3A,FOXN3,NTRK2 ,PLCB1,MAPK1,LAMB1,SDCBP,ATP9A,BPTF,G RIK1,SOX5,PRKG1,DSCAM,BIRC6,NFIB,DIP2 B,TUT4,THSD7A,EGFR,PPFIA2,PTPRQ,NCAM2 ,BCR,MAGI2,NELL1,AKAP6,LARGE1,MBNL1,R TTN,ARHGEF28,FUT9,MYT1L,SRGAP2B,SCN2A ,CNTN1,ZNRF3,POU6F2,DOCK10,TENM3,OPCM L,ITPKB,GRM5,MED1,ENPEP,EPHA6,FNDC3A, CA10,SPIRE1,AIMP1,LDB2,NECAB1,WDR72,N RG3,PID1,NLGN1,ABL1,PTPRG,JARID2,PAQR 5,EBF2,JAM2,GRID2,LRP2,SEMA6D,MBTPS2, SMOC1,FER,SETDB2,RYR2,FBXL17,PRLR,ZNF 160,NFATC2,FAT3,NTNG1,MTPN,MTMR2,LRP1 2,FGF10,SOX6,CADM1,SGCD,RC3H2,PCDH9,A TF6,EYS,SP3,VCL,SEZ6L,ZDHHC21,XKR6,VC AM1,RAPGEF2,CDH7,IFT81,SHANK2,RAPGEF5 ,INSR,AKAP13,ILDR2,IMMP2L,SYNJ1,KLF15 ,UNC5D,ATXN1,GABRG2,FAT1,ENPP1,ULK2,N RXN3,RIMS2,KCNQ3,SCN8A,ZFHX3,PGM5,AST N1,GFRA1,BMPR1B,CPE,SEMA5A,CABLES1,AT P8A2,SLC24A3,KITLG,PYGO1,ARHGAP24,FRE M1,MAP4K4,CTNNA2,APC,APLF,GPC6,DNER,A DGRV1,RELN,MACROD2,BNC2,ANXA4,AUTS2,R OR1,PPP2R3A,BMP2K,SNAI2,CYFIP2,KAZN,A DAMTSL1,NDFIP1,TNR,PTPN13,OCA2,CELF4, AKT3,ST8SIA6,CRB1,VAV3,BCAS3,PRKCA,US H1C,MRTFB,DNAH5,CNTN6,FMN2,APP,PDLIM5 ,RPS6KA3,XYLT1,SMAD5,SLC6A3,NYAP2,VPS 13B,ALPK2,ASB2,EYA2,ADGRB1,CCDC88A,GH RH,ARNT2,AFF3,SPOCK1
GO:003250 2	developmen tal process	4.96224085 42145834e- 27	*FSTL1,ERBB4,PDE6A,RNF38,MACF1,PAK1,CT NND2,TRIO,MITF,RTN1,SETD2,AMBRA1,SYNE 2,EPN2,DOP1B,IGSF3,ALPK3,MYO3B,EVC,NR*

| | | | P1,TEAD1,NFIA,FRY,CDH13,MDGA2,RC3H1,R PS6KA5,LHFPL2,EPS8,TAOK3,HERC2,LRFN5, ABL2,PRKCB,SLC23A2,ARHGEF7,UTRN,SLC8A 1,DACH1,EML1,CMIP,CDK12,ANKRD6,HTR2C, KCNC1,STAU2,SIAH3,CNTN4,ST8SIA4,AFG3L 2,LDLRAD4,SEMA3A,SLC8A3,RFX3,RBFOX1,S TARD13,MMP16,SLC40A1,LRRC4C,CADM2,ALC AM,ATP11C,LIMD1,ADAM32,MYEF2,DCLK1,DN AH11,SLC9C1,ADAMTS9,NIPBL,CEP120,CDC4 2EP3,FGD4,MBD5,KIF16B,SDC2,NCAM1,CLST N2,TCF12,KDM4B,ADGRL2,TANC1,NEBL,ITGA 8,SYCP1,MYO10,TCF4,IREB2,PBX1,FAM171A 1,ATP10A,PHACTR1,BICRAL,TTC21B,ABCD2, SLC39A12,DISC1,CLTCL1,HECW2,FMN1,EYA1 ,RORB,KIAA1217,GABRB1,SVIL,NTM,APBA2, ASAP1,TTLL7,EDAR,ATP2B2,ANKRD26,FRMD6 ,FYN,SH3KBP1,AGO2,CREBBP,SLC1A2,ZBTB1 6,CSMD3,B4GALT6,SLIT3,GRIN2B,ANTXR1,S RGAP2,ARSB,GRIA1,TAFA5,NEGR1,SPRED1,S PEN,NAV2,FGF12,SPATA48,TPM1,COL19A1,C RIM1,NOTCH2,FLNB,TOX,PCDH15,ESR1,SRGA P2C,ABCB5,TMOD2,ZSWIM6,MEGF11,PDE4D,T JP1,ARHGAP26,LRIG1,PRKACB,RIMS1,PARVB ,LAMA1,JCAD,GLI3,BRINP1,NRXN1,NTRK3,S GCG,FBN1,WWOX,WASF3,ARID1B,HYDIN,TSPA N2,CPQ,WDPCP,MOSMO,PIAS1,CDH20,ZNF521 ,PBX3,PRICKLE2,LSAMP,HMGA2,FHOD3,GREB 1L,RERE,SLC4A10,PHLPP1,ATL1,MYO1E,ZDH HC17,ITGA4,ROCK1,HERC1,DOCK1,CACNA1C, GLIS1,RXRG,COL4A2,DNM3,PACRG,SYT1,BBS 2,ARHGAP32,ASXL3,PRKN,DPF3,FOXP2,SCAP ER,SIAH2,LATS2,EXOC4,RORA,PTPRD,BBS9, RANBP3L,TG,HDAC4,ADGRB3,ADAM29,DGKG,M YO9A,MYO3A,FOXN3,NTRK2,PLCB1,MAPK1,LA MB1,SDCBP,ATP9A,BPTF,GRIK1,SOX5,PRKG1 ,DSCAM,BIRC6,NFIB,DIP2B,TUT4,THSD7A,E GFR,PPFIA2,PTPRQ,MGA,NCAM2,BCR,MAGI2, NELL1,AKAP6,LARGE1,MBNL1,RTTN,ARHGEF2 8,FUT9,MYT1L,SRGAP2B,SCN2A,CNTN1,ZNRF 3,POU6F2,ZNF449,DOCK10,TENM3,OPCML,IT PKB,GRM5,MED1,ENPEP,EPHA6,FNDC3A,CA10 ,SPIRE1,AIMP1,LDB2,NECAB1,WDR72,NRG3, PID1,NLGN1,ABL1,PTPRG,JARID2,PAQR5,EB F2,JAM2,GRID2,LRP2,SEMA6D,MBTPS2,SMOC 1,FER,SETDB2,RYR2,FBXL17,PRLR,ZNF160, NFATC2,FAT3,NTNG1,MED15,MTPN,VSTM2A,M TMR2,LRP12,FGF10,SOX6,CADM1,SGCD,RC3H 2,PCDH9,ATF6,EYS,SP3,VCL,SEZ6L,ZDHHC2 1,XKR6,VCAM1,RAPGEF2,CDH7,IFT81,SHANK 2,RAPGEF5,INSR,AKAP13,ILDR2,IMMP2L,SY NJ1,KLF15,UNC5D,ATXN1,GABRG2,FAT1,ENP P1,ULK2,UNC13C,NRXN3,RIMS2,KCNQ3,SCN8 A,ZFHX3,PGM5,ASTN1,GFRA1,BMPR1B,CPE,F CRLA,SEMA5A,CABLES1,ATP8A2,SLC24A3,KI TLG,PYGO1,ARHGAP24,FREM1,MAP4K4,CTNNA 2,PRAME,APC,APLF,GPC6,DNER,ABCA5,ADGR V1,RELN,MACROD2,BNC2,ANXA4,AUTS2,ROR1 ,PPP2R3A,BMP2K,SNAI2,CYFIP2,KAZN,ADAM TSL1,NDFIP1,TNR,PTPN13,OCA2,CELF4,AKT |

			3,ST8SIA6,CRB1,VAV3,BCAS3,PRKCA,USH1C ,MRTFB,DNAH5,CNTN6,FMN2,APP,PDLIM5,RP S6KA3,XYLT1,SMAD5,SLC6A3,DNAJC13,NYAP 2,VPS13B,ALPK2,ASB2,EYA2,ADGRB1,CCDC8 8A,GHRH,ARNT2,AFF3,SPOCK1
GO:003250 1	multicellula r organismal process	4.31651463 66581324e- 24	*FSTL1,SLMAP,ERBB4,KCNMA1,PDE6A,APBB2, RNF38,CUBN,MACF1,PAK1,CTNND2,TRIO,MIT F,RTN1,SETD2,KIRREL1,AMBRA1,SYNE2,EPN 2,NETO2,DOP1B,IGSF3,ALPK3,MYO3B,EVC,N RP1,TEAD1,NFIA,FRY,CDH13,MDGA2,RC3H1, RPS6KA5,LHFPL2,EPS8,TAOK3,HERC2,LRFN5 ,OR4C46,ABL2,PRKCB,SLC23A2,ARHGEF7,UT RN,SLC8A1,DACH1,EML1,CMIP,LNPEP,SLC2A 13,HTR2C,KCNC1,DYSF,STAU2,SIAH3,TMEM6 3C,CNTN4,ST8SIA4,AFG3L2,LDLRAD4,SEMA3 A,SLC8A3,RFX3,RBFOX1,STARD13,MMP16,SL C40A1,LRRC4C,CADM2,ALCAM,SLCO3A1,ATP1 1C,LIMD1,ADAM32,MYEF2,DCLK1,DNAH11,SL C9C1,ADAMTS9,NIPBL,CEP120,HMCN1,GRIK2 ,IGSF11,MBD5,KIF16B,SDC2,NCAM1,CLSTN2 ,TCF12,KDM4B,ADGRL2,TANC1,CORO2B,PAPP A,NEBL,ITGA8,SYCP1,ZBTB20,PJA2,ASB3,T CF4,TAFA4,GABRG1,IREB2,PBX1,PHACTR1,B ICRAL,TTC21B,ABCD2,SLC39A12,DISC1,HEC W2,FMN1,ARHGAP42,EYA1,RORB,PIEZO2,KIA A1217,GABRB1,NTM,APBA2,ASAP1,TTLL7,ED AR,ATP2B2,FYN,SH3KBP1,AGO2,CREBBP,SLC 1A2,ZBTB16,CSMD3,DLGAP1,B4GALT6,SLIT3 ,GRIN2B,ANTXR1,SRGAP2,ARSB,GRIA1,TAFA 5,NEGR1,SPRED1,SPEN,NAV2,FGF12,DGKB,C ACNG2,BTBD9,SPATA48,TPM1,COL19A1,CRIM 1,NOTCH2,TOX,PCDH15,ESR1,GABRG3,SRGAP 2C,ABCB5,TMOD2,ZSWIM6,MEGF11,PDE4D,TJ P1,ARHGAP26,LRIG1,PRKACB,RIMS1,LAMA1, JCAD,GLI3,DOCK4,BRINP1,NRXN1,NTRK3,SG CG,FBN1,WWOX,WASF3,ARID1B,HYDIN,TSPAN 2,WDPCP,MOSMO,NEK10,PIAS1,ZNF521,PBX3 ,LSAMP,HMGA2,FHOD3,GRID1,GREB1L,ZNF28 7,RERE,SLC4A10,PHLPP1,ATL1,MYO1E,SLC7 A2,ZDHHC17,PKN2,ITGA4,ABCC9,ROCK1,HER C1,DOCK1,CACNA1C,GLIS1,PRKAA2,ARHGEF1 1,COL4A2,DNM3,PACRG,SYT1,BBS2,GRB10,A RHGAP32,PRKN,DPF3,FOXP2,SCAPER,SIAH2, LATS2,EXOC4,PPP1R12B,RORA,PTPRD,BBS9, RANBP3L,TG,HDAC4,ADGRB3,ADAM29,DGKG,M YO9A,MYO3A,FOXN3,NTRK2,PLCB1,MAPK1,LA MB1,SDCBP,ATP9A,BPTF,GRIK1,SOX5,PRKG1 ,DSCAM,BIRC6,DGKI,NFIB,DIP2B,TUT4,THS D7A,NBEA,EGFR,PPFIA2,PTPRQ,NCAM2,CLCN 5,BCR,MAGI2,NELL1,AKAP6,LARGE1,MBNL1, RTTN,ARHGEF28,PLCL1,FUT9,MYT1L,TMPRSS 3,SRGAP2B,SORCS3,SCN2A,CNTN1,ZNRF3,PO U6F2,GNAQ,ZNF449,DOCK10,TENM3,OPCML,I TPKB,GRM5,MED1,ENPEP,EPHA6,FNDC3A,CA1 0,SPIRE1,AIMP1,LDB2,NECAB1,NRG3,ATP8A 1,NLGN1,ABL1,PTPRG,NCOR1,JARID2,PAQR5 ,OR9Q1,EBF2,JAM2,GRID2,LRP2,ERBIN,SEM A6D,MBTPS2,SMOC1,FER,PAK5,SETDB2,RYR2 ,IL17RA,FBXL17,MCC,PRLR,NFATC2,FAT3,C*

			ACNB2,NTNG1,MED15,MTPN,GNG7,MTMR2,LRP 12,MAPRE2,FGF10,NOS1AP,SOX6,CADM1,SGC D,RC3H2,PCDH9,ATF6,EYS,SP3,VCL,SEZ6L, ZDHHC21,VCAM1,RAPGEF2,IFT81,SHANK2,RA PGEF5,INSR,AKAP13,ILDR2,IMMP2L,PPIP5K 2,SYNJ1,KLF15,UNC5D,ATXN1,GABRG2,FAT1 ,ENPP1,ULK2,NRXN3,RIMS2,RHPN2,PPM1F,K CNQ3,SCN8A,ZFHX3,ASTN1,DLGAP2,GFRA1,B MPR1B,MAPKBP1,CPE,KCND2,SEMA5A,CABLES 1,ATP8A2,SLC24A3,KITLG,PYGO1,LHFPL3,A RHGAP24,FREM1,MAP4K4,CTNNA2,APC,APLF, DNER,ABCA5,ADGRV1,RELN,MACROD2,AKAP11 ,BNC2,ANXA4,CYBRD1,AUTS2,ROR1,PPP2R3A ,BMP2K,SNAI2,CYFIP2,SLC4A4,KAZN,ADAMT SL1,NDFIP1,TNR,PTPN13,DTNA,OCA2,CELF4 ,AKT3,ST8SIA6,CRB1,VAV3,IL1R1,BCAS3,P RKCA,USH1C,MRTFB,DNAH5,CNTN6,ENPP3,FM N2,APP,CHST3,PDLIM5,RPS6KA3,XYLT1,SMA D5,SLC6A3,DNAJC13,NYAP2,VPS13B,ALPK2, ASB2,EYA2,MAPK8IP1,ADGRB1,CCDC88A,GHR H,ARNT2,RAP1GDS1,AFF3,SPOCK1
GO:004869 9	generation of neurons	1.61966582 7232924e-23	*ERBB4,MACF1,PAK1,CTNND2,TRIO,RTN1,NRP 1,NFIA,FRY,MDGA2,RPS6KA5,TAOK3,ABL2,S LC23A2,EML1,STAU2,CNTN4,AFG3L2,SEMA3A ,LRRC4C,ALCAM,MYEF2,DCLK1,NIPBL,SDC2, NCAM1,TCF12,TCF4,PBX1,PHACTR1,TTC21B, SLC39A12,DISC1,HECW2,EYA1,RORB,GABRB1 ,NTM,ASAP1,ATP2B2,FYN,CSMD3,B4GALT6,S LIT3,SRGAP2,ARSB,NEGR1,NOTCH2,TOX,PCD H15,SRGAP2C,ZSWIM6,RIMS1,LAMA1,GLI3,B RINP1,NRXN1,NTRK3,TSPAN2,WDPCP,MOSMO, ZNF521,PBX3,RERE,SLC4A10,ATL1,ZDHHC17 ,ITGA4,ROCK1,HERC1,DNM3,SYT1,ARHGAP32 ,PRKN,RORA,PTPRD,ADGRB3,DGKG,MYO9A,NT RK2,LAMB1,ATP9A,SOX5,PRKG1,DSCAM,NFIB ,DIP2B,PPFIA2,PTPRQ,NCAM2,MAGI2,LARGE 1,ARHGEF28,FUT9,MYT1L,CNTN1,DOCK10,TE NM3,OPCML,MED1,EPHA6,NRG3,NLGN1,ABL1, PTPRG,GRID2,LRP2,SEMA6D,FAT3,NTNG1,MT PN,MTMR2,LRP12,VCL,VCAM1,RAPGEF2,UNC5 D,ULK2,NRXN3,RIMS2,KCNQ3,ZFHX3,ASTN1, GFRA1,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTN NA2,DNER,ADGRV1,RELN,AUTS2,ROR1,PPP2R 3A,CYFIP2,ADAMTSL1,TNR,CRB1,USH1C,CNT N6,APP,PDLIM5,NYAP2,VPS13B,ADGRB1,CCD C88A,SPOCK1*
GO:002200 8	neurogenesi s	8.33690013 4274317e-23	*ERBB4,MACF1,PAK1,CTNND2,TRIO,RTN1,SYN E2,NRP1,NFIA,FRY,MDGA2,RPS6KA5,TAOK3, ABL2,SLC23A2,EML1,STAU2,CNTN4,AFG3L2, SEMA3A,SLC8A3,LRRC4C,ALCAM,MYEF2,DCLK 1,NIPBL,CEP120,SDC2,NCAM1,TCF12,TCF4, PBX1,PHACTR1,TTC21B,SLC39A12,DISC1,HE CW2,EYA1,RORB,GABRB1,NTM,ASAP1,ATP2B2 ,FYN,CSMD3,B4GALT6,SLIT3,SRGAP2,ARSB, NEGR1,SPEN,NAV2,NOTCH2,TOX,PCDH15,SRG AP2C,ZSWIM6,RIMS1,LAMA1,GLI3,BRINP1,N RXN1,NTRK3,WASF3,TSPAN2,WDPCP,MOSMO,Z NF521,PBX3,RERE,SLC4A10,ATL1,ZDHHC17, ITGA4,ROCK1,HERC1,DNM3,SYT1,ARHGAP32,*

			PRKN,RORA,PTPRD,ADGRB3,DGKG,MYO9A,NTRK2,MAPK1,LAMB1,ATP9A,SOX5,PRKG1,DSCAM,NFIB,DIP2B,EGFR,PPFIA2,PTPRQ,NCAM2,MAGI2,LARGE1,ARHGEF28,FUT9,MYT1L,CNTN1,DOCK10,TENM3,OPCML,GRM5,MED1,EPHA6,NRG3,NLGN1,ABL1,PTPRG,GRID2,LRP2,SEMA6D,FAT3,NTNG1,MTPN,MTMR2,LRP12,FGF10,SOX6,VCL,VCAM1,RAPGEF2,KLF15,UNC5D,ULK2,NRXN3,RIMS2,KCNQ3,ZFHX3,ASTN1,GFRA1,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTNNA2,DNER,ADGRV1,RELN,AUTS2,ROR1,PPP2R3A,CYFIP2,ADAMTSL1,TNR,CRB1,USH1C,CNTN6,APP,PDLIM5,NYAP2,VPS13B,ADGRB1,CCDC88A,SPOCK1
GO:0030182	neuron differentiation	1.5608997182808606e-22	*ERBB4,MACF1,PAK1,CTNND2,TRIO,RTN1,NRP1,NFIA,FRY,MDGA2,RPS6KA5,TAOK3,ABL2,SLC23A2,STAU2,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM,MYEF2,DCLK1,SDC2,NCAM1,TCF12,TCF4,PBX1,PHACTR1,TTC21B,SLC39A12,DISC1,HECW2,EYA1,RORB,GABRB1,NTM,ASAP1,ATP2B2,FYN,CSMD3,B4GALT6,SLIT3,SRGAP2,ARSB,NEGR1,NOTCH2,TOX,PCDH15,SRGAP2C,ZSWIM6,RIMS1,LAMA1,GLI3,BRINP1,NRXN1,NTRK3,TSPAN2,WDPCP,MOSMO,ZNF521,PBX3,RERE,SLC4A10,ATL1,ZDHHC17,ITGA4,ROCK1,HERC1,DNM3,SYT1,ARHGAP32,PRKN,RORA,PTPRD,ADGRB3,DGKG,MYO9A,NTRK2,LAMB1,ATP9A,PRKG1,DSCAM,NFIB,DIP2B,PPFIA2,PTPRQ,NCAM2,MAGI2,ARHGEF28,FUT9,MYT1L,CNTN1,DOCK10,TENM3,OPCML,MED1,EPHA6,NLGN1,ABL1,PTPRG,GRID2,LRP2,SEMA6D,FAT3,NTNG1,MTPN,MTMR2,LRP12,VCL,VCAM1,RAPGEF2,UNC5D,ULK2,NRXN3,RIMS2,KCNQ3,ZFHX3,GFRA1,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTNNA2,ADGRV1,RELN,AUTS2,ROR1,PPP2R3A,CYFIP2,ADAMTSL1,TNR,CRB1,USH1C,CNTN6,APP,PDLIM5,NYAP2,VPS13B,ADGRB1,CCDC88A,SPOCK1*
GO:0009653	anatomical structure morphogenesis	9.0948201977334549e-22	*ERBB4,MACF1,PAK1,CTNND2,TRIO,SETD2,EPN2,MYO3B,NRP1,NFIA,FRY,CDH13,RC3H1,RPS6KA5,EPS8,TAOK3,PRKCB,SLC23A2,ARHGEF7,ANKRD6,STAU2,CNTN4,AFG3L2,SEMA3A,STARD13,MMP16,SLC40A1,LRRC4C,ALCAM,LIMD1,DCLK1,DNAH11,ADAMTS9,NIPBL,CDC42EP3,FGD4,KIF16B,SDC2,NCAM1,TANC1,NEBL,ITGA8,MYO10,PBX1,FAM171A1,ATP10A,PHACTR1,TTC21B,SLC39A12,DISC1,CLTCL1,HECW2,FMN1,EYA1,RORB,EDAR,FRMD6,FYN,SH3KBP1,AGO2,CREBBP,ZBTB16,B4GALT6,SLIT3,SRGAP2,TAFA5,SPRED1,TPM1,NOTCH2,FLNB,PCDH15,ESR1,TMOD2,MEGF11,TJP1,LRIG1,PRKACB,RIMS1,PARVB,LAMA1,JCAD,GLI3,NRXN1,FBN1,WWOX,WASF3,WDPCP,CDH20,PBX3,PRICKLE2,HMGA2,FHOD3,GREB1L,RERE,SLC4A10,ATL1,MYO1E,ZDHHC17,ITGA4,ROCK1,HERC1,DOCK1,CACNA1C,COL4A2,DNM3,SYT1,BBS2,ARHGAP32,ASXL3,PRKN,LATS2,EXOC4,RORA,PTPRD,ADGRB3,MYO9A,MYO3A,FOXN3,NTRK2,MAPK1,LAMB1,ATP9A,SOX5,PRKG1,DSCAM,NFI*

			B,DIP2B,THSD7A,EGFR,PPFIA2,PTPRQ,BCR, MAGI2,LARGE1,MBNL1,ARHGEF28,CNTN1,ZNR F3,DOCK10,TENM3,MED1,ENPEP,EPHA6,SPIR E1,AIMP1,WDR72,NRG3,PID1,NLGN1,ABL1,J AM2,GRID2,LRP2,SEMA6D,SETDB2,RYR2,NFA TC2,FAT3,NTNG1,MTPN,MTMR2,FGF10,SOX6, SGCD,SP3,VCL,RAPGEF2,CDH7,INSR,AKAP13 ,UNC5D,FAT1,ULK2,NRXN3,RIMS2,PGM5,BMP R1B,CPE,SEMA5A,ATP8A2,ARHGAP24,FREM1, MAP4K4,CTNNA2,APC,GPC6,RELN,AUTS2,ROR 1,PPP2R3A,SNAI2,CYFIP2,ADAMTSL1,TNR,A KT3,CRB1,VAV3,BCAS3,PRKCA,USH1C,CNTN6 ,APP,PDLIM5,SMAD5,SLC6A3,NYAP2,VPS13B ,ALPK2,ASB2,EYA2,ADGRB1,AFF3
GO:000715 4	cell communicat ion	1.09511938 80004e-21	*FSTL1,ERBB4,PDE6A,APBB2,FYB2,MACF1,PA K1,CTNND2,TRIO,MITF,AMBRA1,EPN2,NETO2 ,PDE1C,EVC,NRP1,TEAD1,NFIA,CDH13,RC3H 1,RPS6KA5,EPS8,TAOK3,OR4C46,ABL2,PRKC B,ARHGEF7,UTRN,GPC5,MAML2,ARHGEF12,SA MD12,SLC8A1,LNPEP,ANKRD6,RERG,HTR2C,D YSF,STAU2,CACNA1E,SNTG1,CNTN4,USP14,C NKSR3,LDLRAD4,SEMA3A,PLIN2,SLC8A3,RFX 3,MGAT5,STARD13,LRRC4C,ALCAM,ERLIN2,L IMD1,PIK3C3,DCLK1,MAGI3,CDC42EP3,FGD4 ,GRIK2,SNX25,IGSF11,RGL1,CCDC186,MBD5 ,KIF16B,NCAM1,CLSTN2,SIPA1L2,RCAN2,AD GRL2,GNG12,PAPPA,ITGA8,VPS41,GRIK4,MY O10,PJA2,ASB3,TAFA4,GABRG1,TOM1L2,TTC 21B,NEK6,SLC39A12,MOB1B,ARHGAP28,DISC 1,SV2B,RIC3,RALGPS1,ARHGAP42,EYA1,KSR 1,RORB,GPR158,GABRB1,ANKS1B,APBA2,EDA R,FRMD6,RGS20,FYN,SH3KBP1,NALCN,CREBB P,SLC1A2,CADPS,DLGAP1,SLIT3,RGS7,FHIT ,GRIN2B,SRGAP2,STK32A,GRIA1,TRABD2B,T AFA5,SPRED1,MYO5A,SPEN,FGF12,DGKB,CAC NG2,GARNL3,BTBD9,CRIM1,NOTCH2,FLNB,MA DD,ESR1,GABRG3,NFAT5,TMOD2,PLCXD3,PDE 4D,TJP1,ARHGAP26,ERC2,PTPRT,PRKACB,GN G2,TRHDE,RIMS1,HIPK3,WSB1,FCHSD2,SGMS 1,LAMA1,JCAD,GLI3,DOCK4,MAST4,GAST,IT PR2,NRXN1,NTRK3,FBN1,WWOX,WDPCP,MAGI1 ,MOSMO,RAPGEF4,CNKSR2,NEK10,PIAS1,PRI CKLE2,HMGA2,HHAT,GRID1,PARP8,SEL1L,SL C4A10,PHLPP1,SYN2,MYO1E,ZDHHC17,PKN2, ITGA4,GSG1L,ROCK1,DCDC1,DOCK1,CACNA1C ,ARHGAP31,UBR1,RXRG,PRKAA2,ARHGEF11,A MPH,SORCS1,COL4A2,SYT1,BBS2,GRB10,ARH GAP32,PRKN,SIAH2,LATS2,EXOC4,DOCK9,DL G2,PPP1R12B,RORA,PTPRD,CDC14B,TTR,PTP RN2,TG,HDAC4,ADGRB3,INPP4B,DGKG,MYO9A ,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP, GRIK1,CUL5,PRKG1,DSCAM,BIRC6,DGKI,NLK ,EGFR,PPFIA2,BCR,MAGI2,AKAP6,LARGE1,A RHGEF28,PLCL1,MOK,TBC1D1,IQCJ-SCHIP1,SORCS3,SCN2A,RNF152,CNTN1,ZNRF 3,GNAQ,DOCK10,TENM3,ITPKB,GRM5,MED1,E NPEP,EPHA6,ARAP2,AIMP1,NRG3,CPEB4,PID 1,NLGN1,ABL1,PTPRG,NCOR1,OR9Q1,GRID2, ELMO1,LRP2,ERBIN,SEMA6D,PPM1L,CABIN1,*

			MBTPS2,FER,PAK5,RYR2,IL17RA,FBXL17,MC C,PRLR,NFATC2,DST,GRIK3,CACNB2,STXBP4 ,NTNG1,GNG7,MTMR2,LRP12,MAPRE2,FGF10, NOS1AP,CADM1,SGCD,RC3H2,RIC8B,ATF6,ST K32B,ZNF106,SEZ6L,ZDHHC21,VCAM1,RAPGE F2,RGS12,IFT81,SHANK2,ZMYND11,RAPGEF5 ,INSR,SRGAP3,PDK1,AKAP13,ILDR2,SYNJ1, KLF15,DENND4C,UNC5D,GABRG2,ARFGEF1,FA T1,PATJ,ITGA9,ENPP1,ULK2,UNC13C,NRXN3 ,RIMS2,RHPN2,PPM1F,KCNQ3,SCN8A,DENND2 B,DLGAP2,GFRA1,ATRNL1,GPR156,BMPR1B,N SG1,MAPKBP1,CPE,KCND2,FCRLA,SEMA5A,KI TLG,PYGO1,SV2C,ARHGAP24,FREM1,GRIA4,M AP4K4,CNIH3,DOCK3,PRAME,APC,GPC6,DNER ,ADGRV1,RELN,AKAP11,ANXA4,AUTS2,ROR1, PPP2R3A,MTMR3,BMP2K,SNAI2,CYFIP2,NDFI P1,TNR,DTNA,CELF4,AKT3,CRB1,VAV3,IL1R 1,BCAS3,PRKCA,INPP5A,USP8,CNTN6,FMN2, ERC1,APP,RPS6KA3,SMAD5,SLC6A3,PSD3,AL PK2,ASB2,EYA2,MAPK8IP1,ADGRB1,CCDC88A ,GHRH,RAP1GDS1
GO:003433 0	cell junction organization	1.41958001 79495067e- 21	*ERBB4,APBB2,MACF1,CTNND2,KIRREL1,NRP1 0 ,NFIA,CDH13,RPS6KA5,LRFN5,ARHGEF7,STA U2,AFG3L2,SLC8A3,LRRC4C,PDZRN3,CLSTN2 ,ADGRL2,TANC1,CORO2B,DISC1,FMN1,PEAK1 ,ASAP1,FRMPD4,FYN,GRIN2B,SRGAP2,GRIA1 ,NEGR1,DGKB,CACNG2,CLDN10,SRGAP2C,TJP 1,ERC2,PTPRT,NRXN1,WASF3,WDPCP,CNKSR2 ,CDH20,CTTNBP2,GRID1,PKN2,ROCK1,DNM3, PTPRD,TLN2,ADGRB3,MYO9A,NTRK2,SDCBP,D SCAM,NBEA,PPFIA2,BCR,LARGE1,DOCK10,GR M5,NRG3,NLGN1,ABL1,GRID2,FER,DST,CACN B2,NTNG1,MTMR2,MAPRE2,NOS1AP,MPDZ,VCL ,SEZ6L,RAPGEF2,CDH7,SHANK2,INSR,GABRG 2,PATJ,UNC13C,NRXN3,PPM1F,MAP4K4,CTNN A2,APC,DNER,RELN,SNAI2,TNR,PTPN13,PRK CA,ERC1,APP,PDLIM5,ADGRB1*
GO:004866 6	neuron developmen t	2.52728058 82926964e- 21	*MACF1,PAK1,CTNND2,TRIO,NRP1,FRY,RPS6K A5,TAOK3,ABL2,SLC23A2,STAU2,CNTN4,AFG 3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,SDC2,NC AM1,PBX1,PHACTR1,SLC39A12,DISC1,HECW2 ,RORB,GABRB1,NTM,ASAP1,FYN,CSMD3,B4GA LT6,SLIT3,SRGAP2,ARSB,NEGR1,NOTCH2,TO X,PCDH15,SRGAP2C,RIMS1,LAMA1,GLI3,BRI NP1,NRXN1,NTRK3,TSPAN2,WDPCP,PBX3,RER E,SLC4A10,ATL1,ZDHHC17,ITGA4,ROCK1,HE RC1,DNM3,SYT1,ARHGAP32,PRKN,PTPRD,ADG RB3,DGKG,MYO9A,NTRK2,LAMB1,ATP9A,PRKG 1,DSCAM,NFIB,DIP2B,PPFIA2,PTPRQ,NCAM2 ,MAGI2,ARHGEF28,FUT9,MYT1L,CNTN1,DOCK 10,TENM3,OPCML,EPHA6,NLGN1,ABL1,PTPRG ,GRID2,LRP2,SEMA6D,FAT3,NTNG1,MTMR2,L RP12,VCL,RAPGEF2,UNC5D,ULK2,NRXN3,RIM S2,KCNQ3,GFRA1,BMPR1B,SEMA5A,ATP8A2,M AP4K4,CTNNA2,ADGRV1,RELN,AUTS2,ROR1,C YFIP2,ADAMTSL1,TNR,CRB1,USH1C,CNTN6,A PP,PDLIM5,NYAP2,VPS13B,ADGRB1,CCDC88A ,SPOCK1*
GO:002305	signaling	8.34794072	*FSTL1,ERBB4,PDE6A,APBB2,FYB2,MACF1,PA*

| 2 | | 1568393e-21 | K1,CTNND2,TRIO,MITF,EPN2,NETO2,PDE1C,EVC,NRP1,TEAD1,NFIA,CDH13,RC3H1,RPS6KA5,EPS8,TAOK3,OR4C46,ABL2,PRKCB,ARHGEF7,UTRN,GPC5,MAML2,ARHGEF12,SAMD12,SLC8A1,LNPEP,ANKRD6,RERG,HTR2C,DYSF,STAU2,CACNA1E,CNTN4,USP14,CNKSR3,LDLRAD4,SEMA3A,SLC8A3,RFX3,MGAT5,STARD13,LRRC4C,ALCAM,ERLIN2,LIMD1,PIK3C3,DCLK1,MAGI3,CDC42EP3,FGD4,GRIK2,SNX25,IGSF11,RGL1,CCDC186,MBD5,KIF16B,NCAM1,CLSTN2,SIPA1L2,RCAN2,ADGRL2,GNG12,PAPPA,ITGA8,GRIK4,MYO10,PJA2,ASB3,TAFA4,GABRG1,TOM1L2,TTC21B,NEK6,SLC39A12,MOB1B,ARHGAP28,DISC1,SV2B,RIC3,RALGPS1,ARHGAP42,EYA1,KSR1,RORB,GPR158,GABRB1,ANKS1B,APBA2,EDAR,FRMD6,RGS20,FYN,SH3KBP1,NALCN,CREBBP,SLC1A2,CADPS,DLGAP1,SLIT3,RGS7,FHIT,GRIN2B,SRGAP2,STK32A,GRIA1,TRABD2B,TAFA5,SPRED1,MYO5A,SPEN,FGF12,DGKB,CACNG2,GARNL3,BTBD9,CRIM1,NOTCH2,FLNB,MADD,ESR1,GABRG3,NFAT5,TMOD2,PLCXD3,PDE4D,TJP1,ARHGAP26,ERC2,PTPRT,PRKACB,GNG2,TRHDE,RIMS1,HIPK3,WSB1,FCHSD2,SGMS1,LAMA1,JCAD,GLI3,DOCK4,MAST4,GAST,ITPR2,NRXN1,NTRK3,FBN1,WWOX,WDPCP,MAGI1,MOSMO,RAPGEF4,CNKSR2,NEK10,PIAS1,PRICKLE2,HMGA2,HHAT,GRID1,PARP8,SEL1L,SLC4A10,PHLPP1,SYN2,MYO1E,ZDHHC17,PKN2,ITGA4,GSG1L,ROCK1,DCDC1,DOCK1,CACNA1C,ARHGAP31,UBR1,RXRG,PRKAA2,ARHGEF11,AMPH,SORCS1,COL4A2,SYT1,BBS2,GRB10,ARHGAP32,PRKN,SIAH2,LATS2,EXOC4,DOCK9,DLG2,PPP1R12B,RORA,PTPRD,CDC14B,TTR,PTPRN2,TG,HDAC4,ADGRB3,INPP4B,DGKG,MYO9A,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,GRIK1,CUL5,PRKG1,DSCAM,BIRC6,DGKI,NLK,EGFR,PPFIA2,BCR,MAGI2,AKAP6,LARGE1,ARHGEF28,PLCL1,MOK,TBC1D1,IQCJ-SCHIP1,SORCS3,SCN2A,RNF152,CNTN1,ZNRF3,GNAQ,DOCK10,TENM3,ITPKB,GRM5,MED1,ENPEP,EPHA6,ARAP2,AIMP1,NRG3,CPEB4,PID1,NLGN1,ABL1,PTPRG,NCOR1,OR9Q1,GRID2,ELMO1,LRP2,ERBIN,SEMA6D,PPM1L,CABIN1,MBTPS2,FER,PAK5,RYR2,IL17RA,FBXL17,MCC,PRLR,NFATC2,DST,GRIK3,CACNB2,STXBP4,NTNG1,GNG7,MTMR2,LRP12,MAPRE2,FGF10,NOS1AP,CADM1,SGCD,RC3H2,RIC8B,ATF6,STK32B,ZNF106,SEZ6L,ZDHHC21,VCAM1,RAPGEF2,RGS12,IFT81,SHANK2,ZMYND11,RAPGEF5,INSR,SRGAP3,PDK1,AKAP13,ILDR2,SYNJ1,KLF15,DENND4C,UNC5D,GABRG2,ARFGEF1,FAT1,PATJ,ITGA9,ENPP1,ULK2,UNC13C,NRXN3,RIMS2,RHPN2,PPM1F,KCNQ3,DENND2B,DLGAP2,GFRA1,ATRNL1,GPR156,BMPR1B,NSG1,MAPKBP1,CPE,KCND2,FCRLA,SEMA5A,KITLG,PYGO1,SV2C,ARHGAP24,GRIA4,MAP4K4,CNIH3,DOCK3,PRAME,APC,GPC6,DNER,ADGRV1,RELN,AKAP11,ANXA4,AUTS2,ROR1,PPP2R3A,BMP2 |

			K,SNAI2,CYFIP2,NDFIP1,TNR,DTNA,CELF4, AKT3,CRB1,VAV3,IL1R1,BCAS3,PRKCA,INPP 5A,USP8,CNTN6,FMN2,ERC1,APP,RPS6KA3,S MAD5,SLC6A3,PSD3,ALPK2,ASB2,EYA2,MAPK 8IP1,ADGRB1,CCDC88A,GHRH,RAP1GDS1
GO:003117 5	neuron projection developmen t	3.32677928 03339874e- 19	*MACF1,PAK1,CTNND2,TRIO,NRP1,FRY,RPS6K A5,TAOK3,ABL2,SLC23A2,STAU2,CNTN4,AFG 3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,SDC2,NC AM1,PHACTR1,SLC39A12,DISC1,HECW2,ASAP 1,FYN,CSMD3,B4GALT6,SLIT3,SRGAP2,ARSB ,NEGR1,NOTCH2,TOX,PCDH15,SRGAP2C,RIMS 1,LAMA1,GLI3,NRXN1,NTRK3,TSPAN2,RERE, ATL1,ZDHHC17,ITGA4,ROCK1,HERC1,DNM3,S YT1,ARHGAP32,PRKN,PTPRD,ADGRB3,DGKG,M YO9A,NTRK2,LAMB1,ATP9A,PRKG1,DSCAM,NF IB,DIP2B,PPFIA2,NCAM2,MAGI2,ARHGEF28, FUT9,CNTN1,DOCK10,TENM3,EPHA6,NLGN1,A BL1,PTPRG,GRID2,LRP2,SEMA6D,FAT3,NTNG 1,LRP12,VCL,RAPGEF2,UNC5D,ULK2,NRXN3, RIMS2,GFRA1,BMPR1B,SEMA5A,ATP8A2,MAP4 K4,CTNNA2,ADGRV1,RELN,AUTS2,ROR1,CYFI P2,ADAMTSL1,TNR,USH1C,CNTN6,APP,PDLIM 5,NYAP2,VPS13B,ADGRB1,CCDC88A,SPOCK1*
GO:012003 6	plasma membrane bounded cell projection organization	4.50800774 3591528e- 19	*MACF1,PAK1,CTNND2,TRIO,SYNE2,MYO3B,NR P1,FRY,CDH13,RPS6KA5,EPS8,TAOK3,ABL2, SLC23A2,ARHGEF7,STAU2,CNTN4,AFG3L2,SE MA3A,RFX3,LRRC4C,ALCAM,DCLK1,CEP120,C DC42EP3,FGD4,SDC2,NCAM1,TANC1,MYO10,P HACTR1,TTC21B,ABCD2,SLC39A12,DISC1,HE CW2,ASAP1,FYN,CSMD3,B4GALT6,SLIT3,GRI N2B,SRGAP2,ARSB,NEGR1,TPM1,NOTCH2,TOX ,PCDH15,SRGAP2C,RIMS1,PARVB,LAMA1,GLI 3,NRXN1,NTRK3,WASF3,HYDIN,TSPAN2,WDPC P,RERE,ATL1,ZDHHC17,ITGA4,ROCK1,HERC1 ,CFAP70,DNM3,SYT1,BBS2,ARHGAP32,PRKN, PTPRD,CDC14B,BBS9,ADGRB3,DGKG,MYO9A,M YO3A,NTRK2,LAMB1,SDCBP,ATP9A,PRKG1,DS CAM,NFIB,DIP2B,PPFIA2,NCAM2,MAGI2,RTT N,ARHGEF28,FUT9,CNTN1,DOCK10,TENM3,EP HA6,NLGN1,ABL1,PTPRG,GRID2,LRP2,SEMA6 D,FER,FAT3,NTNG1,MTMR2,LRP12,VCL,RAPG EF2,IFT81,INSR,UNC5D,ULK2,NRXN3,RIMS2 ,GFRA1,BMPR1B,SEMA5A,ATP8A2,ARHGAP24, MAP4K4,CTNNA2,APC,ADGRV1,RELN,AUTS2,R OR1,CYFIP2,ADAMTSL1,TNR,VAV3,USH1C,DN AH5,CNTN6,APP,PDLIM5,NYAP2,VPS13B,ADG RB1,CCDC88A,SPOCK1*
GO:000726 8	chemical synaptic transmissio n	5.57311374 8814375e- 19	*TRIO,NETO2,PRKCB,HTR2C,DYSF,STAU2,CAC NA1E,CNTN4,USP14,SLC8A3,LRRC4C,GRIK2, IGSF11,CLSTN2,GRIK4,GABRG1,DISC1,SV2B ,RIC3,GABRB1,APBA2,FYN,NALCN,SLC1A2,C ADPS,DLGAP1,GRIN2B,GRIA1,FGF12,DGKB,C ACNG2,BTBD9,GABRG3,TMOD2,ERC2,RIMS1,F CHSD2,NRXN1,GRID1,SLC4A10,SYN2,AMPH,S YT1,PRKN,EXOC4,DLG2,PTPRD,PTPRN2,NTRK 2,PLCB1,MAPK1,SDCBP,GRIK1,DGKI,PPFIA2 ,BCR,LARGE1,PLCL1,SORCS3,GRM5,NRG3,NL GN1,ABL1,GRID2,GRIK3,CACNB2,NTNG1,MTM R2,RAPGEF2,SHANK2,SYNJ1,GABRG2,UNC13C*

			,NRXN3,RIMS2,KCNQ3,DLGAP2,NSG1,KCND2, SV2C,GRIA4,RELN,TNR,DTNA,CELF4,USP8,E RC1,APP,RPS6KA3,SLC6A3,ADGRB1
GO:009891 6	anterograde trans-synaptic signaling	5.57311374 8814375e-19	*TRIO,NETO2,PRKCB,HTR2C,DYSF,STAU2,CAC NA1E,CNTN4,USP14,SLC8A3,LRRC4C,GRIK2, IGSF11,CLSTN2,GRIK4,GABRG1,DISC1,SV2B ,RIC3,GABRB1,APBA2,FYN,NALCN,SLC1A2,C ADPS,DLGAP1,GRIN2B,GRIA1,FGF12,DGKB,C ACNG2,BTBD9,GABRG3,TMOD2,ERC2,RIMS1,F CHSD2,NRXN1,GRID1,SLC4A10,SYN2,AMPH,S YT1,PRKN,EXOC4,DLG2,PTPRD,PTPRN2,NTRK 2,PLCB1,MAPK1,SDCBP,GRIK1,DGKI,PPFIA2 ,BCR,LARGE1,PLCL1,SORCS3,GRM5,NRG3,NL GN1,ABL1,GRID2,GRIK3,CACNB2,NTNG1,MTM R2,RAPGEF2,SHANK2,SYNJ1,GABRG2,UNC13C ,NRXN3,RIMS2,KCNQ3,DLGAP2,NSG1,KCND2, SV2C,GRIA4,RELN,TNR,DTNA,CELF4,USP8,E RC1,APP,RPS6KA3,SLC6A3,ADGRB1*
GO:003003 0	cell projection organization	6.52568674 9666561e-19	*MACF1,PAK1,CTNND2,TRIO,SYNE2,MYO3B,NR P1,FRY,CDH13,RPS6KA5,EPS8,TAOK3,ABL2, SLC23A2,ARHGEF7,STAU2,CNTN4,AFG3L2,SE MA3A,RFX3,LRRC4C,ALCAM,DCLK1,CEP120,C DC42EP3,FGD4,SDC2,NCAM1,TANC1,ITGA8,M YO10,PHACTR1,TTC21B,ABCD2,SLC39A12,DI SC1,HECW2,ASAP1,FYN,CSMD3,B4GALT6,SLI T3,GRIN2B,SRGAP2,ARSB,NEGR1,TPM1,NOTC H2,TOX,PCDH15,SRGAP2C,RIMS1,PARVB,LAM A1,GLI3,NRXN1,NTRK3,WASF3,HYDIN,TSPAN 2,WDPCP,RERE,ATL1,ZDHHC17,PKN2,ITGA4, ROCK1,HERC1,CFAP70,DNM3,SYT1,BBS2,ARH GAP32,PRKN,PTPRD,CDC14B,BBS9,ADGRB3,D GKG,MYO9A,MYO3A,NTRK2,LAMB1,SDCBP,ATP 9A,PRKG1,DSCAM,NFIB,DIP2B,PPFIA2,NCAM 2,MAGI2,RTTN,ARHGEF28,FUT9,CNTN1,DOCK 10,TENM3,EPHA6,NLGN1,ABL1,PTPRG,GRID2 ,LRP2,SEMA6D,FER,FAT3,NTNG1,MTMR2,LRP 12,VCL,RAPGEF2,IFT81,INSR,UNC5D,ULK2, NRXN3,RIMS2,GFRA1,BMPR1B,SEMA5A,ATP8A 2,ARHGAP24,MAP4K4,CTNNA2,APC,ADGRV1,R ELN,AUTS2,ROR1,CYFIP2,ADAMTSL1,TNR,VA V3,USH1C,DNAH5,CNTN6,APP,PDLIM5,NYAP2 ,VPS13B,ADGRB1,CCDC88A,SPOCK1*
GO:009953 6	synaptic signaling	7.10168445 3992585e-19	*TRIO,NETO2,PRKCB,UTRN,HTR2C,DYSF,STAU 2,CACNA1E,CNTN4,USP14,SLC8A3,LRRC4C,G RIK2,IGSF11,CLSTN2,GRIK4,GABRG1,DISC1 ,SV2B,RIC3,GABRB1,APBA2,FYN,NALCN,SLC 1A2,CADPS,DLGAP1,GRIN2B,GRIA1,FGF12,D GKB,CACNG2,BTBD9,GABRG3,TMOD2,ERC2,RI MS1,FCHSD2,NRXN1,GRID1,SLC4A10,SYN2,A MPH,SYT1,PRKN,EXOC4,DLG2,PTPRD,PTPRN2 ,NTRK2,PLCB1,MAPK1,SDCBP,GRIK1,DGKI,P PFIA2,BCR,LARGE1,PLCL1,SORCS3,GNAQ,GR M5,NRG3,NLGN1,ABL1,GRID2,GRIK3,CACNB2 ,NTNG1,MTMR2,RAPGEF2,SHANK2,SYNJ1,GAB RG2,UNC13C,NRXN3,RIMS2,KCNQ3,DLGAP2,N SG1,KCND2,SV2C,GRIA4,RELN,TNR,DTNA,CE LF4,USP8,ERC1,APP,RPS6KA3,SLC6A3,ADGR B1*
GO:000090	cell	8.95092204	*MACF1,PAK1,CTNND2,TRIO,NRP1,NFIA,FRY,*

2	morphogenesis	9903835e-19	CDH13,RPS6KA5,EPS8,TAOK3,SLC23A2,ARHGEF7,STAU2,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM,LIMD1,DCLK1,CDC42EP3,FGD4,SDC2,NCAM1,MYO10,FAM171A1,ATP10A,PHACTR1,SLC39A12,DISC1,HECW2,FRMD6,FYN,SH3KBP1,B4GALT6,SLIT3,SRGAP2,TPM1,NOTCH2,FLNB,PCDH15,RIMS1,PARVB,GLI3,NRXN1,WASF3,WDPCP,CDH20,RERE,ATL1,ZDHHC17,ITGA4,ROCK1,DNM3,SYT1,ARHGAP32,PRKN,LATS2,PTPRD,ADGRB3,MYO9A,NTRK2,ATP9A,PRKG1,DSCAM,NFIB,DIP2B,EGFR,PPFIA2,PTPRQ,ARHGEF28,CNTN1,DOCK10,MED1,EPHA6,NLGN1,ABL1,LRP2,SEMA6D,NTNG1,VCL,RAPGEF2,CDH7,UNC5D,FAT1,ULK2,NRXN3,RIMS2,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTNNA2,RELN,AUTS2,CYFIP2,ADAMTSL1,TNR,CRB1,CNTN6,APP,PDLIM5,NYAP2,ADGRB1
GO:0099537	trans-synaptic signaling	9.74766580184756e-19	TRIO,NETO2,PRKCB,HTR2C,DYSF,STAU2,CACNA1E,CNTN4,USP14,SLC8A3,LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4,GABRG1,DISC1,SV2B,RIC3,GABRB1,APBA2,FYN,NALCN,SLC1A2,CADPS,DLGAP1,GRIN2B,GRIA1,FGF12,DGKB,CACNG2,BTBD9,GABRG3,TMOD2,ERC2,RIMS1,FCHSD2,NRXN1,GRID1,SLC4A10,SYN2,AMPH,SYT1,PRKN,EXOC4,DLG2,PTPRD,PTPRN2,NTRK2,PLCB1,MAPK1,SDCBP,GRIK1,DGKI,PPFIA2,BCR,LARGE1,PLCL1,SORCS3,GRM5,NRG3,NLGN1,ABL1,GRID2,GRIK3,CACNB2,NTNG1,MTMR2,RAPGEF2,SHANK2,SYNJ1,GABRG2,UNC13C,NRXN3,RIMS2,KCNQ3,DLGAP2,NSG1,KCND2,SV2C,GRIA4,RELN,TNR,DTNA,CELF4,USP8,ERC1,APP,RPS6KA3,SLC6A3,ADGRB1
GO:0065007	biological regulation	1.3859603372111618e-17	FSTL1,HPSE2,SLMAP,SAMD4A,ERBB4,KCNMA1,PDE6A,APBB2,KLHL13,FYB2,MACF1,PAK1,CTNND2,SLC6A11,SCAF8,ATP9B,TRIO,MITF,RTN1,SETD2,KIRREL1,AMBRA1,SYNE2,EPN2,NETO2,PDE1C,ZNF208,MYO3B,EVC,MED13L,NRP1,TEAD1,NFIA,FRY,CDH13,ZNF718,RC3H1,RPS6KA5,LHFPL2,EPS8,TAOK3,ZSCAN30,LRFN5,ZNF66,OR4C46,ABL2,PRKCB,SLC23A2,ARHGEF7,UTRN,GPC5,ZNF704,MAML2,ARHGEF12,SAMD12,SLC8A1,LYPLA1,DACH1,LNPEP,PRR16,CDK12,SLC2A13,ANKRD6,RERG,HTR2C,ZNF397,KCNC1,DYSF,STAU2,NEK4,CACNA1E,SIAH3,FYCO1,LPGAT1,CNTN4,CTIF,TBC1D5,USP14,AFG3L2,CNKSR3,FRMD5,LDLRAD4,SEMA3A,TRIM2,PLIN2,SLC8A3,RFX3,MGAT5,RBFOX1,STARD13,SLC40A1,LRRC4C,ALCAM,MALRD1,ERLIN2,SLCO3A1,ATP11C,LIMD1,PIK3C3,DCLK1,DNAH11,SLC9C1,ADAMTS9,MAGI3,NIPBL,CEP120,CDC42EP3,CHD6,FGD4,GRIK2,SNX25,IGSF11,RGL1,CCDC186,GSAP,MBD5,KIF16B,NKAIN3,SDC2,NCAM1,CLSTN2,TCF12,SIPA1L2,CCNG2,RCAN2,ADGRL2,GNG12,TANC1,CORO2B,PAPPA,EVI5,ITGA8,SYCP1,VPS41,GRIK4,ZBTB20,MYO10,ZNF407,PJA2,ASB3,TCF4,TAFA4,GABRG1,TSHZ2,TOM1L2,IREB2,PBX1,FAM171A1,ATP10A,PHACTR1,BICRAL,TTC21B,NEK6,ABCD2,SLC39A12,MOB1B,ARHGAP28

| | | | ,DISC1,CLTCL1,SV2B,HECW2,RIC3,FMN1,RALGPS1,ARHGAP42,PEAK1,EYA1,KSR1,RORB,PIEZO2,GPR158,ZNF236,GABRB1,SVIL,ANKS1B,APBA2,ASAP1,SGSM1,FRMPD4,EDAR,ST8SIA1,ATP2B2,ANKRD26,FRMD6,RGS20,FYN,SH3KBP1,AGO2,NALCN,CREBBP,SLC1A2,ZBTB16,PRMT8,CADPS,CSMD3,DLGAP1,SLIT3,RGS7,FHIT,GRIN2B,ANTXR1,SRGAP2,STK32A,ARSB,GRIA1,TRABD2B,TAFA5,NEGR1,SPRED1,MYO5A,SPEN,NAV2,FGF12,DGKB,CACNG2,GARNL3,KANSL1,BTBD9,TPM1,COL19A1,EBF1,CRIM1,NOTCH2,FLNB,MADD,TOX,CLDN10,ESR1,GABRG3,NFAT5,SRGAP2C,ABCB5,TMOD2,PLCXD3,PDE4D,TJP1,ARHGAP26,ERC2,PTPRT,PRKACB,GNG2,TRHDE,RIMS1,HIPK3,WSB1,TMEM225,FCHSD2,SGMS1,PARVB,LAMA1,JCAD,GLI3,DOCK4,MAST4,GAST,ITPR2,BRINP1,NRXN1,FRMD4A,SUPT16H,NTRK3,BCL2L13,JAZF1,FBN1,WWOX,WASF3,LONP2,ARID1B,MTUS1,CPQ,WDPCP,MAGI1,PRRC1,MOSMO,RAPGEF4,CNKSR2,NEK10,ZNF74,ANKRD31,PIAS1,ZNF521,PBX3,PRICKLE2,DPP6,HMGA2,HHAT,CTTNBP2,FHOD3,GRID1,PARP8,ZNF287,CREB5,TNRC6B,RERE,CACNA2D3,SEL1L,ZNF608,SLC4A10,PHLPP1,SYN2,MYO1E,ZDHHC17,PKN2,ITGA4,ABCC9,GSG1L,ROCK1,HERC1,DCDC1,DOCK1,CACNA1C,GLIS1,ARHGAP31,UBR1,RXRG,PRKAA2,ARHGEF11,AMPH,SORCS1,COL4A2,DNM3,SYT1,BBS2,GRB10,ARHGAP32,ASXL3,PRKN,DPF3,FOXP2,EDIL3,SIAH2,LATS2,EXOC4,DOCK9,DLG2,PPP1R12B,SACS,RORA,PTPRD,CDC14B,CDYL2,TTR,PTPRN2,RANBP3L,TG,HDAC4,ADGRB3,INPP4B,DGKG,ZNF717,MYO9A,MYO3A,FOXN3,NTRK2,PLCB1,HIVEP2,MAPK1,LAMB1,SDCBP,ATP9A,BPTF,TASOR2,GRIK1,CUL5,SOX5,PRKG1,DSCAM,BIRC6,DGKI,NFIB,DIP2B,TUT4,NLK,SPOP,NBEA,EGFR,PPFIA2,STXBP6,MGA,MXI1,BCR,TTC28,MAGI2,NELL1,AKAP6,LARGE1,MBNL1,STX12,FANCM,ARHGEF28,PLCL1,MELTF,FUT9,MYT1L,MOK,ANKFY1,TBC1D1,IQCJ-SCHIP1,SORCS3,PDP2,SLC12A1,SCN2A,RNF152,CNTN1,ZNRF3,POU6F2,GNAQ,ZNF449,DOCK10,TENM3,ITPKB,GRM5,MED1,ENPEP,EPHA6,GLIS3,SPIRE1,ARAP2,AIMP1,LDB2,NECAB1,SNX30,NRG3,CPEB4,ATP8A1,PID1,NLGN1,ABL1,PTPRG,NCOR1,JARID2,PRDM10,OR9Q1,EBF2,JAM2,GRID2,ELMO1,LRP2,ERBIN,SEMA6D,PPM1L,CABIN1,ZNF573,MBTPS2,SMOC1,FER,PAK5,SETDB2,RYR2,ELF2,IL17RA,LDLRAD3,FBXL17,MCC,SUSD4,PRLR,ZNF160,ZNF280B,NFATC2,DST,FAT3,GRIK3,CACNB2,STXBP4,NTNG1,MED15,MTPN,VSTM2A,GNG7,MTMR2,KCNH5,LRP12,MAPRE2,FGF10,ZNF169,KIF13A,NOS1AP,SOX6,CADM1,SGCD,RC3H2,PDE4DIP,RIC8B,MPDZ,YLPM1,ATF6,SP3,STK32B,VCL,ZNF106,SEZ6L,ZDHHC21,XKR6,VCAM1,RAPGEF2,RGS12,IFT81,SHANK2,ZMYND11,RAPGEF5,INSR,SRGAP3,PDK1,AKAP13,WDR41,ILDR2,SYNJ1,KLF15,DENND4C,UNC5D,ATXN1,KDM1 |

			B,GABRG2,ARFGEF1,FAT1,PATJ,ITGA9,ENPP1,ULK2,UNC13C,ZNF462,NRXN3,RIMS2,RHPN2,PPM1F,KCNQ3,SCN8A,ZFHX3,DENND2B,EGLN3,DLGAP2,GFRA1,ATRNL1,GPR156,BMPR1B,NSG1,MAPKBP1,CPE,KCND2,FCRLA,SEMA5A,CABLES1,ATP8A2,SLC24A3,KITLG,PYGO1,SV2C,ARHGAP24,GRIA4,MAP4K4,CNIH3,DOCK3,CTNNA2,PRAME,APC,APLF,GPC6,DNER,ABCA5,RFX7,ADGRV1,RELN,AKAP11,VPS13C,BNC2,ANXA4,KCNJ15,AUTS2,TBC1D9,ROR1,PPP2R3A,MTMR3,BMP2K,SNAI2,CYFIP2,SLC4A4,NDFIP1,TNR,PTPN13,DTNA,SNAP91,OCA2,CELF4,AKT3,CRB1,VAV3,IL1R1,BCAS3,NPAS3,PRKCA,HEPACAM,KMT2C,INPP5A,USP8,USH1C,MRTFB,ZNF678,CNTN6,KCNS3,ENPP3,FMN2,ERC1,APP,PDLIM5,RPS6KA3,BTAF1,SMAD5,SLC6A3,DNAJC13,PSD3,ALPK2,ABCA13,ASB2,EYA2,MAPK8IP1,ADGRB1,CCDC88A,GHRH,ARNT2,RAP1GDS1,AFF3,SPOCK1
GO:0050789	regulation of biological process	3.2617644812432246e-17	*FSTL1,HPSE2,SLMAP,SAMD4A,ERBB4,KCNMA1,PDE6A,APBB2,KLHL13,FYB2,MACF1,PAK1,CTNND2,SCAF8,TRIO,MITF,RTN1,SETD2,KIRREL1,AMBRA1,SYNE2,EPN2,NETO2,PDE1C,ZNF208,MYO3B,EVC,MED13L,NRP1,TEAD1,NFIA,FRY,CDH13,ZNF718,RC3H1,RPS6KA5,LHFPL2,EPS8,TAOK3,ZSCAN30,LRFN5,ZNF66,OR4C46,ABL2,PRKCB,SLC23A2,ARHGEF7,UTRN,GPC5,ZNF704,MAML2,ARHGEF12,SAMD12,SLC8A1,LYPLA1,DACH1,LNPEP,PRR16,CDK12,SLC2A13,ANKRD6,RERG,HTR2C,ZNF397,KCNC1,DYSF,STAU2,NEK4,CACNA1E,SIAH3,FYCO1,LPGAT1,CNTN4,CTIF,TBC1D5,USP14,AFG3L2,CNKSR3,FRMD5,LDLRAD4,SEMA3A,TRIM2,PLIN2,SLC8A3,RFX3,MGAT5,RBFOX1,STARD13,SLC40A1,LRRC4C,ALCAM,MALRD1,ERLIN2,SLCO3A1,ATP11C,LIMD1,PIK3C3,DCLK1,DNAH11,ADAMTS9,MAGI3,NIPBL,CEP120,CDC42EP3,CHD6,FGD4,GRIK2,SNX25,IGSF11,RGL1,CCDC186,GSAP,MBD5,KIF16B,NKAIN3,SDC2,NCAM1,CLSTN2,TCF12,SIPA1L2,CCNG2,RCAN2,ADGRL2,GNG12,TANC1,CORO2B,PAPPA,ITGA8,SYCP1,VPS41,GRIK4,ZBTB20,MYO10,ZNF407,PJA2,ASB3,TCF4,TAFA4,GABRG1,TSHZ2,TOM1L2,IREB2,PBX1,FAM171A1,ATP10A,PHACTR1,BICRAL,TTC21B,NEK6,ABCD2,SLC39A12,MOB1B,ARHGAP28,DISC1,CLTCL1,SV2B,HECW2,RIC3,FMN1,RALGPS1,ARHGAP42,PEAK1,EYA1,KSR1,RORB,GPR158,ZNF236,GABRB1,SVIL,ANKS1B,APBA2,ASAP1,FRMPD4,EDAR,ST8SIA1,ATP2B2,ANKRD26,FRMD6,RGS20,FYN,SH3KBP1,AGO2,NALCN,CREBBP,SLC1A2,ZBTB16,CADPS,CSMD3,DLGAP1,SLIT3,RGS7,FHIT,GRIN2B,ANTXR1,SRGAP2,STK32A,ARSB,GRIA1,TRABD2B,TAFA5,NEGR1,SPRED1,MYO5A,SPEN,FGF12,DGKB,CACNG2,GARNL3,KANSL1,BTBD9,TPM1,COL19A1,EBF1,CRIM1,NOTCH2,FLNB,MADD,TOX,CLDN10,ESR1,GABRG3,NFAT5,SRGAP2C,TMOD2,PLCXD3,PDE4D,TJP1,ARHGAP26,ERC2,PTPRT,PRKACB,GNG2,TRHDE,RIMS1,HI*

			PK3,WSB1,TMEM225,FCHSD2,SGMS1,PARVB,L AMA1,JCAD,GLI3,DOCK4,MAST4,GAST,ITPR2 ,BRINP1,NRXN1,FRMD4A,SUPT16H,NTRK3,BC L2L13,JAZF1,FBN1,WWOX,WASF3,LONP2,ARI D1B,MTUS1,WDPCP,MAGI1,PRRC1,MOSMO,RAP GEF4,CNKSR2,NEK10,ZNF74,ANKRD31,PIAS1 ,ZNF521,PBX3,PRICKLE2,DPP6,HMGA2,HHAT ,CTTNBP2,FHOD3,GRID1,PARP8,ZNF287,CRE B5,TNRC6B,RERE,CACNA2D3,SEL1L,ZNF608, SLC4A10,PHLPP1,SYN2,MYO1E,ZDHHC17,PKN 2,ITGA4,ABCC9,GSG1L,ROCK1,HERC1,DCDC1 ,DOCK1,CACNA1C,GLIS1,ARHGAP31,UBR1,RX RG,PRKAA2,ARHGEF11,AMPH,SORCS1,COL4A2 ,DNM3,SYT1,BBS2,GRB10,ARHGAP32,ASXL3, PRKN,DPF3,FOXP2,EDIL3,SIAH2,LATS2,EXO C4,DOCK9,DLG2,PPP1R12B,SACS,RORA,PTPR D,CDC14B,CDYL2,TTR,PTPRN2,RANBP3L,TG, HDAC4,ADGRB3,INPP4B,DGKG,ZNF717,MYO9A ,MYO3A,FOXN3,NTRK2,PLCB1,HIVEP2,MAPK1 ,LAMB1,SDCBP,ATP9A,BPTF,TASOR2,GRIK1, CUL5,SOX5,PRKG1,DSCAM,BIRC6,DGKI,NFIB ,DIP2B,TUT4,NLK,SPOP,NBEA,EGFR,PPFIA2 ,STXBP6,MGA,MXI1,BCR,TTC28,MAGI2,NELL 1,AKAP6,LARGE1,MBNL1,FANCM,ARHGEF28,P LCL1,MELTF,FUT9,MYT1L,MOK,ANKFY1,TBC1 D1,IQCJ- SCHIP1,SORCS3,SCN2A,RNF152,CNTN1,ZNRF 3,POU6F2,GNAQ,ZNF449,DOCK10,TENM3,ITP KB,GRM5,MED1,ENPEP,EPHA6,GLIS3,SPIRE1 ,ARAP2,AIMP1,LDB2,NECAB1,SNX30,NRG3,C PEB4,ATP8A1,PID1,NLGN1,ABL1,PTPRG,NCO R1,JARID2,PRDM10,OR9Q1,EBF2,JAM2,GRID 2,ELMO1,LRP2,ERBIN,SEMA6D,PPM1L,CABIN 1,ZNF573,MBTPS2,SMOC1,FER,PAK5,SETDB2 ,RYR2,ELF2,IL17RA,LDLRAD3,FBXL17,MCC, SUSD4,PRLR,ZNF160,ZNF280B,NFATC2,DST, FAT3,GRIK3,CACNB2,STXBP4,NTNG1,MED15, MTPN,VSTM2A,GNG7,MTMR2,KCNH5,LRP12,MA PRE2,FGF10,ZNF169,KIF13A,NOS1AP,SOX6, CADM1,SGCD,RC3H2,PDE4DIP,RIC8B,MPDZ,Y LPM1,ATF6,SP3,STK32B,VCL,ZNF106,SEZ6L ,ZDHHC21,VCAM1,RAPGEF2,RGS12,IFT81,SH ANK2,ZMYND11,RAPGEF5,INSR,SRGAP3,PDK1 ,AKAP13,WDR41,ILDR2,SYNJ1,KLF15,DENND 4C,UNC5D,ATXN1,KDM1B,GABRG2,ARFGEF1,F AT1,PATJ,ITGA9,ENPP1,ULK2,UNC13C,ZNF4 62,NRXN3,RIMS2,RHPN2,PPM1F,KCNQ3,SCN8 A,ZFHX3,DENND2B,EGLN3,DLGAP2,GFRA1,AT RNL1,GPR156,BMPR1B,NSG1,MAPKBP1,CPE,K CND2,FCRLA,SEMA5A,CABLES1,ATP8A2,SLC2 4A3,KITLG,PYGO1,SV2C,ARHGAP24,GRIA4,M AP4K4,CNIH3,DOCK3,CTNNA2,PRAME,APC,AP LF,GPC6,DNER,ABCA5,RFX7,ADGRV1,RELN,A KAP11,VPS13C,BNC2,ANXA4,KCNJ15,AUTS2, ROR1,PPP2R3A,MTMR3,BMP2K,SNAI2,CYFIP2 ,SLC4A4,NDFIP1,TNR,PTPN13,DTNA,SNAP91 ,CELF4,AKT3,CRB1,VAV3,IL1R1,BCAS3,NPA S3,PRKCA,HEPACAM,KMT2C,INPP5A,USP8,US H1C,MRTFB,ZNF678,CNTN6,KCNS3,ENPP3,FM

			N2,ERC1,APP,PDLIM5,RPS6KA3,BTAF1,SMAD 5,SLC6A3,DNAJC13,PSD3,ALPK2,ABCA13,AS B2,EYA2,MAPK8IP1,ADGRB1,CCDC88A,GHRH, ARNT2,RAP1GDS1,AFF3,SPOCK1
GO:005080 8	synapse organization	7.31021913 2682761e- 17	*ERBB4,APBB2,CTNND2,NRP1,NFIA,RPS6KA5, LRFN5,STAU2,AFG3L2,SLC8A3,LRRC4C,PDZR N3,CLSTN2,ADGRL2,TANC1,DISC1,ASAP1,FR MPD4,FYN,GRIN2B,SRGAP2,GRIA1,NEGR1,DG KB,CACNG2,SRGAP2C,ERC2,PTPRT,NRXN1,WA SF3,CNKSR2,CTTNBP2,GRID1,ROCK1,DNM3,P TPRD,ADGRB3,NTRK2,SDCBP,DSCAM,NBEA,PP FIA2,LARGE1,DOCK10,GRM5,NRG3,NLGN1,AB L1,GRID2,CACNB2,NTNG1,MTMR2,NOS1AP,SE Z6L,SHANK2,INSR,GABRG2,UNC13C,NRXN3,C TNNA2,DNER,RELN,TNR,PTPN13,ERC1,APP,P DLIM5,ADGRB1*
GO:000726 7	cell-cell signaling	9.82437475 3861468e- 17	*MACF1,CTNND2,TRIO,MITF,NETO2,NRP1,PRK CB,ARHGEF7,UTRN,GPC5,LNPEP,ANKRD6,HTR 2C,DYSF,STAU2,CACNA1E,CNTN4,USP14,SLC 8A3,RFX3,LRRC4C,LIMD1,GRIK2,IGSF11,CC DC186,CLSTN2,GRIK4,GABRG1,TTC21B,DISC 1,SV2B,RIC3,GABRB1,APBA2,FYN,SH3KBP1, NALCN,SLC1A2,CADPS,DLGAP1,GRIN2B,GRIA 1,TRABD2B,FGF12,DGKB,CACNG2,BTBD9,GAB RG3,TMOD2,ERC2,TRHDE,RIMS1,FCHSD2,GLI 3,NRXN1,WWOX,RAPGEF4,PRICKLE2,HMGA2,G RID1,SLC4A10,SYN2,CACNA1C,PRKAA2,AMPH ,SYT1,GRB10,PRKN,SIAH2,LATS2,EXOC4,DL G2,PTPRD,PTPRN2,NTRK2,PLCB1,MAPK1,SDC BP,GRIK1,DGKI,NLK,EGFR,PPFIA2,BCR,MAG I2,LARGE1,PLCL1,TBC1D1,SORCS3,ZNRF3,G NAQ,GRM5,ENPEP,AIMP1,NRG3,NLGN1,ABL1, GRID2,RYR2,MCC,GRIK3,CACNB2,STXBP4,NT NG1,MTMR2,FGF10,RAPGEF2,SHANK2,ILDR2, SYNJ1,KLF15,GABRG2,FAT1,UNC13C,NRXN3, RIMS2,KCNQ3,DLGAP2,GPR156,NSG1,CPE,KC ND2,SEMA5A,PYGO1,SV2C,GRIA4,MAP4K4,AP C,GPC6,RELN,ROR1,PPP2R3A,SNAI2,TNR,DT NA,CELF4,CRB1,BCAS3,USP8,ERC1,APP,RPS 6KA3,SLC6A3,ALPK2,ADGRB1,GHRH*
GO:005079 4	regulation of cellular process	1.74546804 21804708e- 16	*FSTL1,HPSE2,SLMAP,SAMD4A,ERBB4,KCNMA1 ,PDE6A,APBB2,KLHL13,FYB2,MACF1,PAK1,C TNND2,SCAF8,TRIO,MITF,SETD2,KIRREL1,A MBRA1,SYNE2,EPN2,NETO2,PDE1C,ZNF208,M YO3B,EVC,MED13L,NRP1,TEAD1,NFIA,CDH13 ,ZNF718,RC3H1,RPS6KA5,EPS8,TAOK3,ZSCA N30,LRFN5,ZNF66,OR4C46,ABL2,PRKCB,SLC 23A2,ARHGEF7,UTRN,GPC5,ZNF704,MAML2,A RHGEF12,SAMD12,SLC8A1,LYPLA1,DACH1,LN PEP,PRR16,CDK12,ANKRD6,RERG,HTR2C,ZNF 397,KCNC1,DYSF,STAU2,NEK4,CACNA1E,SIA H3,FYCO1,LPGAT1,CNTN4,CTIF,TBC1D5,USP 14,CNKSR3,FRMD5,LDLRAD4,SEMA3A,TRIM2, SLC8A3,RFX3,MGAT5,RBFOX1,STARD13,SLC4 0A1,LRRC4C,ALCAM,MALRD1,ERLIN2,SLCO3A 1,ATP11C,LIMD1,PIK3C3,DCLK1,DNAH11,AD AMTS9,MAGI3,NIPBL,CEP120,CDC42EP3,CHD 6,FGD4,GRIK2,SNX25,IGSF11,RGL1,MBD5,K IF16B,SDC2,NCAM1,CLSTN2,TCF12,SIPA1L2*

			,CCNG2,RCAN2,ADGRL2,GNG12,TANC1,CORO2B,PAPPA,ITGA8,SYCP1,VPS41,GRIK4,ZBTB20,MYO10,ZNF407,PJA2,ASB3,TCF4,TAFA4,GABRG1,TSHZ2,TOM1L2,IREB2,PBX1,ATP10A,PHACTR1,BICRAL,TTC21B,NEK6,ABCD2,SLC39A12,MOB1B,ARHGAP28,DISC1,CLTCL1,SV2B,HECW2,RIC3,FMN1,RALGPS1,ARHGAP42,PEAK1,EYA1,KSR1,RORB,GPR158,ZNF236,GABRB1,SVIL,ANKS1B,APBA2,ASAP1,FRMPD4,EDAR,ST8SIA1,ANKRD26,FRMD6,RGS20,FYN,SH3KBP1,AGO2,NALCN,CREBBP,SLC1A2,ZBTB16,CADPS,CSMD3,DLGAP1,SLIT3,RGS7,FHIT,GRIN2B,ANTXR1,SRGAP2,STK32A,ARSB,GRIA1,TRABD2B,TAFA5,NEGR1,SPRED1,MYO5A,SPEN,FGF12,DGKB,CACNG2,GARNL3,KANSL1,BTBD9,TPM1,COL19A1,EBF1,CRIM1,NOTCH2,FLNB,MADD,TOX,ESR1,GABRG3,NFAT5,SRGAP2C,TMOD2,PLCXD3,PDE4D,TJP1,ARHGAP26,ERC2,PTPRT,PRKACB,GNG2,TRHDE,RIMS1,HIPK3,WSB1,TMEM225,FCHSD2,SGMS1,LAMA1,JCAD,GLI3,DOCK4,MAST4,GAST,ITPR2,BRINP1,NRXN1,FRMD4A,SUPT16H,NTRK3,BCL2L13,JAZF1,FBN1,WWOX,WASF3,LONP2,ARID1B,MTUS1,WDPCP,MAGI1,PRRC1,MOSMO,RAPGEF4,CNKSR2,NEK10,ZNF74,ANKRD31,PIAS1,ZNF521,PBX3,PRICKLE2,DPP6,HMGA2,HHAT,CTTNBP2,FHOD3,GRID1,PARP8,ZNF287,CREB5,TNRC6B,RERE,CACNA2D3,SEL1L,ZNF608,SLC4A10,PHLPP1,MYO1E,ZDHHC17,PKN2,ITGA4,ABCC9,GSG1L,ROCK1,HERC1,DCDC1,DOCK1,CACNA1C,GLIS1,ARHGAP31,UBR1,RXRG,PRKAA2,ARHGEF11,SORCS1,COL4A2,DNM3,SYT1,BBS2,GRB10,ARHGAP32,ASXL3,PRKN,DPF3,FOXP2,EDIL3,SIAH2,LATS2,EXOC4,DOCK9,PPP1R12B,SACS,RORA,PTPRD,CDC14B,CDYL2,TTR,RANBP3L,TG,HDAC4,ADGRB3,INPP4B,DGKG,ZNF717,MYO9A,MYO3A,FOXN3,NTRK2,PLCB1,HIVEP2,MAPK1,LAMB1,SDCBP,ATP9A,BPTF,TASOR2,GRIK1,CUL5,SOX5,PRKG1,DSCAM,BIRC6,DGKI,NFIB,DIP2B,TUT4,NLK,NBEA,EGFR,PPFIA2,STXBP6,MGA,MXI1,BCR,TTC28,MAGI2,NELL1,AKAP6,LARGE1,MBNL1,ARHGEF28,PLCL1,MELTF,FUT9,MYT1L,MOK,ANKFY1,TBC1D1,IQCJ-SCHIP1,SORCS3,SCN2A,RNF152,CNTN1,ZNRF3,POU6F2,GNAQ,ZNF449,DOCK10,TENM3,ITPKB,GRM5,MED1,EPHA6,GLIS3,SPIRE1,ARAP2,AIMP1,LDB2,NECAB1,SNX30,NRG3,CPEB4,ATP8A1,PID1,NLGN1,ABL1,PTPRG,NCOR1,JARID2,PRDM10,OR9Q1,EBF2,JAM2,GRID2,ELMO1,LRP2,ERBIN,SEMA6D,PPM1L,CABIN1,ZNF573,MBTPS2,SMOC1,FER,PAK5,SETDB2,RYR2,ELF2,IL17RA,LDLRAD3,FBXL17,MCC,PRLR,ZNF160,ZNF280B,NFATC2,DST,FAT3,GRIK3,CACNB2,STXBP4,NTNG1,MED15,MTPN,VSTM2A,GNG7,MTMR2,KCNH5,LRP12,MAPRE2,FGF10,ZNF169,KIF13A,NOS1AP,SOX6,CADM1,SGCD,RC3H2,PDE4DIP,RIC8B,MPDZ,YLPM1,ATF6,SP3,STK32B,VCL,ZNF106,SEZ6L,ZDHHC21,VCAM1,RAPGEF2,RGS12,IFT81,SHANK2,ZMYND11

			,RAPGEF5,INSR,SRGAP3,PDK1,AKAP13,WDR4 1,ILDR2,SYNJ1,KLF15,DENND4C,UNC5D,ATX N1,KDM1B,GABRG2,ARFGEF1,PATJ,ITGA9,EN PP1,ULK2,UNC13C,ZNF462,NRXN3,RIMS2,RH PN2,PPM1F,KCNQ3,SCN8A,ZFHX3,DENND2B,E GLN3,DLGAP2,GFRA1,ATRNL1,GPR156,BMPR1 B,NSG1,MAPKBP1,CPE,KCND2,FCRLA,SEMA5A ,CABLES1,ATP8A2,SLC24A3,KITLG,PYGO1,S V2C,ARHGAP24,GRIA4,MAP4K4,CNIH3,DOCK3 ,CTNNA2,PRAME,APC,APLF,GPC6,DNER,ABCA 5,RFX7,ADGRV1,RELN,AKAP11,VPS13C,BNC2 ,ANXA4,KCNJ15,AUTS2,ROR1,PPP2R3A,MTMR 3,BMP2K,SNAI2,CYFIP2,SLC4A4,NDFIP1,TN R,PTPN13,DTNA,SNAP91,CELF4,AKT3,VAV3, IL1R1,BCAS3,NPAS3,PRKCA,HEPACAM,KMT2C ,INPP5A,USP8,USH1C,MRTFB,ZNF678,CNTN6 ,KCNS3,ENPP3,FMN2,ERC1,APP,PDLIM5,RPS 6KA3,BTAF1,SMAD5,SLC6A3,DNAJC13,PSD3, ALPK2,ABCA13,ASB2,EYA2,MAPK8IP1,ADGRB 1,CCDC88A,GHRH,ARNT2,RAP1GDS1,AFF3,SP OCK1
GO:001064 6	regulation of cell communicat ion	2.21040921 73504074e- 16	*FSTL1,ERBB4,MACF1,PAK1,CTNND2,TRIO,EP N2,NETO2,EVC,NRP1,CDH13,RC3H1,EPS8,TA OK3,ABL2,PRKCB,ARHGEF7,GPC5,ARHGEF12, SLC8A1,ANKRD6,HTR2C,DYSF,STAU2,CNTN4, CNKSR3,LDLRAD4,SEMA3A,SLC8A3,RFX3,MGA T5,STARD13,LRRC4C,LIMD1,FGD4,GRIK2,SN X25,IGSF11,MBD5,NCAM1,CLSTN2,SIPA1L2, ITGA8,GRIK4,PJA2,TAFA4,TTC21B,NEK6,AR HGAP28,DISC1,SV2B,RALGPS1,ARHGAP42,EY A1,KSR1,APBA2,EDAR,FRMD6,RGS20,FYN,NA LCN,CREBBP,DLGAP1,SLIT3,RGS7,GRIN2B,S RGAP2,GRIA1,TRABD2B,SPRED1,FGF12,DGKB ,CACNG2,GARNL3,BTBD9,CRIM1,NOTCH2,MAD D,ESR1,NFAT5,TMOD2,PDE4D,ARHGAP26,ERC 2,PTPRT,PRKACB,RIMS1,HIPK3,SGMS1,LAMA 1,JCAD,GLI3,NRXN1,NTRK3,FBN1,WWOX,MOS MO,RAPGEF4,CNKSR2,NEK10,GRID1,SLC4A10 ,PHLPP1,ZDHHC17,GSG1L,ROCK1,ARHGAP31, UBR1,PRKAA2,ARHGEF11,SYT1,GRB10,ARHGA P32,PRKN,SIAH2,LATS2,RORA,PTPRD,DGKG, MYO9A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,G RIK1,BIRC6,DGKI,NLK,EGFR,PPFIA2,BCR,M AGI2,AKAP6,LARGE1,ARHGEF28,PLCL1,TBC1 D1,IQCJ- SCHIP1,SORCS3,RNF152,ZNRF3,GNAQ,ITPKB ,GRM5,MED1,AIMP1,NRG3,PID1,NLGN1,ABL1 ,NCOR1,GRID2,LRP2,ERBIN,FER,PAK5,RYR2 ,FBXL17,MCC,PRLR,GRIK3,STXBP4,NTNG1,G NG7,MTMR2,MAPRE2,FGF10,NOS1AP,CADM1,R C3H2,RIC8B,ATF6,SEZ6L,RAPGEF2,RGS12,I FT81,SHANK2,ZMYND11,INSR,SRGAP3,AKAP1 3,KLF15,DENND4C,ARFGEF1,ENPP1,UNC13C, NRXN3,RIMS2,KCNQ3,DENND2B,DLGAP2,BMPR 1B,NSG1,MAPKBP1,SEMA5A,KITLG,SV2C,ARH GAP24,GRIA4,MAP4K4,CNIH3,DOCK3,PRAME, APC,GPC6,ADGRV1,RELN,AUTS2,ROR1,PPP2R 3A,BMP2K,SNAI2,CYFIP2,NDFIP1,TNR,CELF 4,AKT3,VAV3,IL1R1,PRKCA,USP8,CNTN6,ER*

			C1,APP,SMAD5,PSD3,ALPK2,EYA2,MAPK8IP1,ADGRB1,CCDC88A,GHRH,RAP1GDS1
GO:0048812	neuron projection morphogenesis	5.107570181310812e-16	*MACF1,PAK1,CTNND2,TRIO,NRP1,RPS6KA5,TAOK3,SLC23A2,STAU2,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,SDC2,NCAM1,PHACTR1,SLC39A12,DISC1,HECW2,FYN,B4GALT6,SLIT3,SRGAP2,NOTCH2,RIMS1,GLI3,NRXN1,RERE,ATL1,ZDHHC17,ITGA4,ROCK1,DNM3,SYT1,ARHGAP32,PRKN,PTPRD,ADGRB3,MYO9A,NTRK2,ATP9A,PRKG1,DSCAM,NFIB,DIP2B,PPFIA2,ARHGEF28,CNTN1,DOCK10,EPHA6,NLGN1,ABL1,LRP2,SEMA6D,NTNG1,VCL,RAPGEF2,UNC5D,ULK2,NRXN3,RIMS2,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTNNA2,RELN,AUTS2,CYFIP2,ADAMTSL1,TNR,CNTN6,APP,PDLIM5,NYAP2,ADGRB1*
GO:0032989	cellular component morphogenesis	6.090797366495487e-16	*MACF1,PAK1,CTNND2,TRIO,NRP1,RPS6KA5,TAOK3,SLC23A2,ARHGEF7,STAU2,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,SDC2,NCAM1,NEBL,PHACTR1,SLC39A12,DISC1,HECW2,FYN,B4GALT6,SLIT3,SRGAP2,TPM1,NOTCH2,TMOD2,RIMS1,GLI3,NRXN1,FHOD3,RERE,ATL1,ZDHHC17,ITGA4,ROCK1,DNM3,SYT1,ARHGAP32,PRKN,PTPRD,ADGRB3,MYO9A,NTRK2,ATP9A,PRKG1,DSCAM,NFIB,DIP2B,PPFIA2,ARHGEF28,CNTN1,DOCK10,EPHA6,PID1,NLGN1,ABL1,LRP2,SEMA6D,NTNG1,MTMR2,VCL,RAPGEF2,AKAP13,UNC5D,ULK2,NRXN3,RIMS2,PGM5,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTNNA2,RELN,AUTS2,CYFIP2,ADAMTSL1,TNR,CNTN6,APP,PDLIM5,NYAP2,VPS13B,ADGRB1*
GO:0120039	plasma membrane bounded cell projection morphogenesis	6.126306302678361e-16	*MACF1,PAK1,CTNND2,TRIO,NRP1,RPS6KA5,TAOK3,SLC23A2,ARHGEF7,STAU2,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,SDC2,NCAM1,PHACTR1,SLC39A12,DISC1,HECW2,FYN,B4GALT6,SLIT3,SRGAP2,NOTCH2,RIMS1,GLI3,NRXN1,RERE,ATL1,ZDHHC17,ITGA4,ROCK1,DNM3,SYT1,ARHGAP32,PRKN,PTPRD,ADGRB3,MYO9A,NTRK2,ATP9A,PRKG1,DSCAM,NFIB,DIP2B,PPFIA2,ARHGEF28,CNTN1,DOCK10,EPHA6,NLGN1,ABL1,LRP2,SEMA6D,NTNG1,VCL,RAPGEF2,UNC5D,ULK2,NRXN3,RIMS2,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTNNA2,RELN,AUTS2,CYFIP2,ADAMTSL1,TNR,CNTN6,APP,PDLIM5,NYAP2,ADGRB1*
GO:0023051	regulation of signaling	7.279738747473604e-16	*FSTL1,ERBB4,MACF1,PAK1,CTNND2,TRIO,EPN2,NETO2,EVC,NRP1,CDH13,RC3H1,EPS8,TAOK3,ABL2,PRKCB,ARHGEF7,GPC5,ARHGEF12,ANKRD6,HTR2C,DYSF,STAU2,CNTN4,CNKSR3,LDLRAD4,SEMA3A,SLC8A3,RFX3,MGAT5,STARD13,LRRC4C,LIMD1,FGD4,GRIK2,SNX25,IGSF11,MBD5,KIF16B,NCAM1,CLSTN2,SIPA1L2,ITGA8,GRIK4,PJA2,TAFA4,TTC21B,NEK6,ARHGAP28,DISC1,SV2B,RALGPS1,ARHGAP42,EYA1,KSR1,APBA2,EDAR,FRMD6,RGS20,FYN,NALCN,CREBBP,DLGAP1,SLIT3,RGS7,GRIN2B,SRGAP2,GRIA1,TRABD2B,SPRED1,DGKB,CACNG2,GARNL3,BTBD9,CRIM1,NOTCH2,MADD,ESR1,NFAT5,TMOD2,PDE4D,ARHGAP26,ERC2,PTPR*

			T,PRKACB,RIMS1,HIPK3,SGMS1,LAMA1,JCAD ,GLI3,NRXN1,NTRK3,FBN1,WWOX,MOSMO,RAP GEF4,CNKSR2,NEK10,GRID1,SLC4A10,PHLPP 1,ZDHHC17,GSG1L,ROCK1,ARHGAP31,UBR1,P RKAA2,ARHGEF11,SYT1,GRB10,ARHGAP32,PR KN,SIAH2,LATS2,RORA,PTPRD,DGKG,MYO9A, NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,GRIK1,B IRC6,DGKI,NLK,EGFR,PPFIA2,BCR,MAGI2,A KAP6,LARGE1,ARHGEF28,PLCL1,TBC1D1,IQC J- SCHIP1,SORCS3,RNF152,ZNRF3,GNAQ,ITPKB ,GRM5,MED1,AIMP1,NRG3,PID1,NLGN1,ABL1 ,NCOR1,GRID2,LRP2,ERBIN,FER,PAK5,FBXL 17,MCC,PRLR,GRIK3,STXBP4,NTNG1,GNG7,M TMR2,MAPRE2,FGF10,NOS1AP,CADM1,RC3H2, RIC8B,ATF6,SEZ6L,RAPGEF2,RGS12,IFT81, SHANK2,ZMYND11,INSR,SRGAP3,AKAP13,KLF 15,DENND4C,ARFGEF1,ENPP1,UNC13C,NRXN3 ,RIMS2,KCNQ3,DENND2B,DLGAP2,BMPR1B,NS G1,MAPKBP1,SEMA5A,KITLG,SV2C,ARHGAP24 ,GRIA4,MAP4K4,CNIH3,DOCK3,PRAME,APC,G PC6,ADGRV1,RELN,AUTS2,ROR1,PPP2R3A,BM P2K,SNAI2,CYFIP2,NDFIP1,TNR,CELF4,AKT 3,VAV3,IL1R1,PRKCA,USP8,CNTN6,ERC1,AP P,SMAD5,PSD3,ALPK2,EYA2,MAPK8IP1,ADGR B1,CCDC88A,GHRH,RAP1GDS1
GO:004885 8	cell projection morphogene sis	9.69939873 8086857e- 16	*MACF1,PAK1,CTNND2,TRIO,NRP1,RPS6KA5,T AOK3,SLC23A2,ARHGEF7,STAU2,CNTN4,AFG3 L2,SEMA3A,LRRC4C,ALCAM,DCLK1,SDC2,NCA M1,PHACTR1,SLC39A12,DISC1,HECW2,FYN,B 4GALT6,SLIT3,SRGAP2,NOTCH2,RIMS1,GLI3 ,NRXN1,RERE,ATL1,ZDHHC17,ITGA4,ROCK1, DNM3,SYT1,ARHGAP32,PRKN,PTPRD,ADGRB3, MYO9A,NTRK2,ATP9A,PRKG1,DSCAM,NFIB,DI P2B,PPFIA2,ARHGEF28,CNTN1,DOCK10,EPHA 6,NLGN1,ABL1,LRP2,SEMA6D,NTNG1,VCL,RA PGEF2,UNC5D,ULK2,NRXN3,RIMS2,BMPR1B,S EMA5A,ATP8A2,MAP4K4,CTNNA2,RELN,AUTS2 ,CYFIP2,ADAMTSL1,TNR,CNTN6,APP,PDLIM5 ,NYAP2,ADGRB1*
GO:003015 4	cell differentiati on	1.10258089 30739493e- 15	*FSTL1,ERBB4,MACF1,PAK1,CTNND2,TRIO,MI TF,RTN1,SETD2,AMBRA1,SYNE2,ALPK3,NRP1 ,NFIA,FRY,MDGA2,RC3H1,RPS6KA5,TAOK3,A BL2,SLC23A2,ARHGEF7,SLC8A1,EML1,CDK12 ,HTR2C,STAU2,CNTN4,AFG3L2,LDLRAD4,SEM A3A,SLC8A3,RFX3,RBFOX1,LRRC4C,ALCAM,A TP11C,LIMD1,MYEF2,DCLK1,SLC9C1,ADAMTS 9,NIPBL,CEP120,SDC2,NCAM1,TCF12,TANC1 ,NEBL,ITGA8,SYCP1,TCF4,IREB2,PBX1,PHA CTR1,BICRAL,TTC21B,SLC39A12,DISC1,HEC W2,EYA1,RORB,GABRB1,NTM,ASAP1,TTLL7,E DAR,ATP2B2,ANKRD26,FRMD6,FYN,ZBTB16,C SMD3,B4GALT6,SLIT3,SRGAP2,ARSB,NEGR1, SPRED1,SPEN,NAV2,SPATA48,TPM1,COL19A1 ,CRIM1,NOTCH2,FLNB,TOX,PCDH15,ESR1,SR GAP2C,ABCB5,TMOD2,ZSWIM6,PDE4D,TJP1,R IMS1,LAMA1,GLI3,BRINP1,NRXN1,NTRK3,FB N1,WWOX,WASF3,ARID1B,HYDIN,TSPAN2,WDP CP,MOSMO,PIAS1,ZNF521,PBX3,HMGA2,FHOD*

GO ID	Term	p-value	Genes
			3,RERE,SLC4A10,ATL1,MYO1E,ZDHHC17,ITGA4,ROCK1,HERC1,DOCK1,GLIS1,RXRG,COL4A2,DNM3,PACRG,SYT1,BBS2,ARHGAP32,PRKN,DPF3,LATS2,RORA,PTPRD,BBS9,RANBP3L,HDAC4,ADGRB3,DGKG,MYO9A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,ATP9A,SOX5,PRKG1,DSCAM,NFIB,DIP2B,TUT4,THSD7A,EGFR,PPFIA2,PTPRQ,MGA,NCAM2,BCR,MAGI2,NELL1,AKAP6,LARGE1,MBNL1,ARHGEF28,FUT9,MYT1L,CNTN1,POU6F2,DOCK10,TENM3,OPCML,ITPKB,GRM5,MED1,EPHA6,FNDC3A,NRG3,NLGN1,ABL1,PTPRG,JARID2,PAQR5,EBF2,JAM2,GRID2,LRP2,SEMA6D,SMOC1,FER,FBXL17,PRLR,ZNF160,NFATC2,FAT3,NTNG1,MTPN,VSTM2A,MTMR2,LRP12,FGF10,SOX6,CADM1,SGCD,RC3H2,SP3,VCL,ZDHHC21,VCAM1,RAPGEF2,IFT81,AKAP13,ILDR2,KLF15,UNC5D,FAT1,ENPP1,ULK2,NRXN3,RIMS2,KCNQ3,ZFHX3,PGM5,ASTN1,GFRA1,BMPR1B,FCRLA,SEMA5A,ATP8A2,KITLG,PYGO1,ARHGAP24,MAP4K4,CTNNA2,PRAME,APC,APLF,DNER,ABCA5,ADGRV1,RELN,ANXA4,AUTS2,ROR1,PPP2R3A,SNAI2,CYFIP2,KAZN,ADAMTSL1,NDFIP1,TNR,OCA2,CELF4,CRB1,PRKCA,USH1C,MRTFB,CNTN6,FMN2,APP,PDLIM5,RPS6KA3,SMAD5,DNAJC13,NYAP2,VPS13B,ALPK2,ASB2,EYA2,ADGRB1,CCDC88A,SPOCK1
GO:0048869	cellular developmental process	1.139609374567663e-15	*FSTL1,ERBB4,MACF1,PAK1,CTNND2,TRIO,MITF,RTN1,SETD2,AMBRA1,SYNE2,ALPK3,NRP1,NFIA,FRY,MDGA2,RC3H1,RPS6KA5,TAOK3,ABL2,SLC23A2,ARHGEF7,SLC8A1,EML1,CDK12,HTR2C,STAU2,CNTN4,AFG3L2,LDLRAD4,SEMA3A,SLC8A3,RFX3,RBFOX1,LRRC4C,ALCAM,ATP11C,LIMD1,MYEF2,DCLK1,SLC9C1,ADAMTS9,NIPBL,CEP120,SDC2,NCAM1,TCF12,TANC1,NEBL,ITGA8,SYCP1,TCF4,IREB2,PBX1,PHACTR1,BICRAL,TTC21B,SLC39A12,DISC1,HECW2,EYA1,RORB,GABRB1,NTM,ASAP1,TTLL7,EDAR,ATP2B2,ANKRD26,FRMD6,FYN,ZBTB16,CSMD3,B4GALT6,SLIT3,SRGAP2,ARSB,NEGR1,SPRED1,SPEN,NAV2,SPATA48,TPM1,COL19A1,CRIM1,NOTCH2,FLNB,TOX,PCDH15,ESR1,SRGAP2C,ABCB5,TMOD2,ZSWIM6,PDE4D,TJP1,RIMS1,LAMA1,GLI3,BRINP1,NRXN1,NTRK3,FBN1,WWOX,WASF3,ARID1B,HYDIN,TSPAN2,WDPCP,MOSMO,PIAS1,ZNF521,PBX3,HMGA2,FHOD3,RERE,SLC4A10,ATL1,MYO1E,ZDHHC17,ITGA4,ROCK1,HERC1,DOCK1,GLIS1,RXRG,COL4A2,DNM3,PACRG,SYT1,BBS2,ARHGAP32,PRKN,DPF3,LATS2,RORA,PTPRD,BBS9,RANBP3L,HDAC4,ADGRB3,DGKG,MYO9A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,ATP9A,SOX5,PRKG1,DSCAM,NFIB,DIP2B,TUT4,THSD7A,EGFR,PPFIA2,PTPRQ,MGA,NCAM2,BCR,MAGI2,NELL1,AKAP6,LARGE1,MBNL1,ARHGEF28,FUT9,MYT1L,CNTN1,POU6F2,DOCK10,TENM3,OPCML,ITPKB,GRM5,MED1,EPHA6,FNDC3A,NRG3,NLGN1,ABL1,PTPRG,JARID2,PAQR5,EBF2,JAM2,GRID2,LRP2,SEMA6D,SMOC1,FER,FBXL17,PRLR,ZNF160,NFATC2,FAT3,NTNG1,MTPN,VSTM2A,MTMR2,*

			LRP12,FGF10,SOX6,CADM1,SGCD,RC3H2,SP3,VCL,ZDHHC21,VCAM1,RAPGEF2,IFT81,AKAP13,ILDR2,KLF15,UNC5D,FAT1,ENPP1,ULK2,NRXN3,RIMS2,KCNQ3,ZFHX3,PGM5,ASTN1,GFRA1,BMPR1B,FCRLA,SEMA5A,ATP8A2,KITLG,PYGO1,ARHGAP24,MAP4K4,CTNNA2,PRAME,APC,APLF,DNER,ABCA5,ADGRV1,RELN,ANXA4,AUTS2,ROR1,PPP2R3A,SNAI2,CYFIP2,KAZN,ADAMTSL1,NDFIP1,TNR,OCA2,CELF4,CRB1,PRKCA,USH1C,MRTFB,CNTN6,FMN2,APP,PDLIM5,RPS6KA3,SMAD5,DNAJC13,NYAP2,VPS13B,ALPK2,ASB2,EYA2,ADGRB1,CCDC88A,SPOCK1
GO:0007155	cell adhesion	1.22696792 94032576e-15	*LPP,FYB2,MACF1,CTNND2,KIRREL1,AMBRA1,NRP1,CDH13,RC3H1,LRFN5,ABL2,SLC23A2,ARHGEF7,UTRN,CNTN4,FRMD5,PCDH7,LRRC4C,CADM2,ALCAM,ADAM32,ADAMTS9,HMCN1,IGSF11,NCAM1,CLSTN2,CORO2B,ITGA8,MYO10,DISC1,FMN1,PEAK1,NTM,FYN,ZBTB16,ANTXR1,SRGAP2,NEGR1,TPM1,COL19A1,CLDN10,PCDH15,NFAT5,MEGF11,TJP1,PTPRT,PARVB,LAMA1,JCAD,GLI3,NRXN1,FBN1,ARID1B,WDPCP,MAGI1,CDH20,LSAMP,PKN2,ITGA4,ROCK1,DOCK1,CNTN3,TRPM7,EDIL3,PTPRD,TLN2,LAMB1,PRKG1,DSCAM,EGFR,PPFIA2,STXBP6,NCAM2,BCR,MELTF,FUT9,CNTN1,TENM3,OPCML,ITPKB,FNDC3A,COL14A1,NLGN1,ABL1,JAM2,GRID2,ERBIN,FER,PRLR,DST,FAT3,NTNG1,CADM1,RC3H2,PCDH9,VCL,ZDHHC21,CNTNAP5,VCAM1,CDH7,ILDR2,UNC5D,FAT1,ITGA9,NRXN3,PPM1F,ZFHX3,PGM5,ASTN1,SEMA5A,KITLG,FREM1,MAP4K4,CTNNA2,APC,PARD3B,ADGRV1,RELN,SNAI2,CYFIP2,ADAMTSL1,NDFIP1,TNR,CRB1,VAV3,PRKCA,HEPACAM,CNTN6,APP,PDLIM5,ADGRB1,SPOCK1*
GO:0048513	animal organ development	1.36742050 1894655e-15	*ERBB4,PDE6A,RNF38,MITF,RTN1,SETD2,SYNE2,IGSF3,ALPK3,MYO3B,EVC,NRP1,TEAD1,NFIA,MDGA2,RC3H1,PRKCB,UTRN,SLC8A1,EML1,ANKRD6,KCNC1,STAU2,CNTN4,LDLRAD4,SEMA3A,RFX3,RBFOX1,MMP16,SLC40A1,CADM2,ADAM32,DCLK1,DNAH11,ADAMTS9,NIPBL,CEP120,TCF12,KDM4B,ADGRL2,NEBL,ITGA8,PBX1,PHACTR1,TTC21B,DISC1,FMN1,EYA1,RORB,SVIL,EDAR,ATP2B2,FYN,SLC1A2,ZBTB16,SLIT3,GRIN2B,SRGAP2,GRIA1,SPRED1,FGF12,TPM1,COL19A1,NOTCH2,FLNB,TOX,PCDH15,ESR1,SRGAP2C,ABCB5,ZSWIM6,MEGF11,LRIG1,LAMA1,GLI3,NRXN1,NTRK3,SGCG,FBN1,WWOX,HYDIN,WDPCP,PBX3,PRICKLE2,HMGA2,FHOD3,GREB1L,RERE,SLC4A10,MYO1E,ROCK1,HERC1,CACNA1C,BBS2,ARHGAP32,ASXL3,DPF3,FOXP2,SCAPER,LATS2,EXOC4,RORA,RANBP3L,TG,HDAC4,ADAM29,MYO3A,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,BPTF,SOX5,PRKG1,DSCAM,BIRC6,NFIB,EGFR,PTPRQ,BCR,MAGI2,NELL1,AKAP6,LARGE1,SCN2A,CNTN1,ZNRF3,TENM3,MED1,ENPEP,FNDC3A,CA10,LDB2,WDR72,NRG3,ABL1,JARID2,EBF2,GRID2,LRP2,SEMA6D,MBTPS2,SMOC1,FER,SETDB2,RYR2,FBXL17,PRLR,NFATC2,FAT3,MTPN,FGF10,S*

			OX6,CADM1,SGCD,RC3H2,PCDH9,ATF6,SP3,ZDHHC21,VCAM1,RAPGEF2,INSR,AKAP13,ILDR2,IMMP2L,SYNJ1,KLF15,ATXN1,FAT1,ENPP1,ZFHX3,GFRA1,BMPR1B,CPE,SEMA5A,ATP8A2,SLC24A3,KITLG,PYGO1,FREM1,CTNNA2,APC,APLF,GPC6,DNER,ADGRV1,RELN,MACROD2,BNC2,ROR1,PPP2R3A,BMP2K,SNAI2,KAZN,TNR,CELF4,AKT3,CRB1,USH1C,MRTFB,DNAH5,APP,PDLIM5,XYLT1,SMAD5,SLC6A3,VPS13B,ALPK2,ASB2,ADGRB1,GHRH,ARNT2
GO:0032990	cell part morphogenesis	1.62987900 11699335e-15	*MACF1,PAK1,CTNND2,TRIO,NRP1,RPS6KA5,TAOK3,SLC23A2,ARHGEF7,STAU2,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,SDC2,NCAM1,PHACTR1,SLC39A12,DISC1,HECW2,FYN,B4GALT6,SLIT3,SRGAP2,NOTCH2,RIMS1,GLI3,NRXN1,RERE,ATL1,ZDHHC17,ITGA4,ROCK1,DNM3,SYT1,ARHGAP32,PRKN,PTPRD,ADGRB3,MYO9A,NTRK2,ATP9A,PRKG1,DSCAM,NFIB,DIP2B,PPFIA2,ARHGEF28,CNTN1,DOCK10,EPHA6,PID1,NLGN1,ABL1,LRP2,SEMA6D,NTNG1,VCL,RAPGEF2,UNC5D,ULK2,NRXN3,RIMS2,BMPR1B,SEMA5A,ATP8A2,MAP4K4,CTNNA2,RELN,AUTS2,CYFIP2,ADAMTSL1,TNR,CNTN6,APP,PDLIM5,NYAP2,ADGRB1*
GO:0065008	regulation of biological quality	2.01574520 346671e-15	*SLMAP,SAMD4A,ERBB4,KCNMA1,MACF1,SLC6A11,ATP9B,KIRREL1,NETO2,MYO3B,NRP1,RC3H1,RPS6KA5,EPS8,LRFN5,ABL2,PRKCB,ARHGEF7,SLC8A1,LNPEP,PRR16,HTR2C,KCNC1,DYSF,STAU2,SIAH3,CNTN4,SEMA3A,SLC8A3,RFX3,ATP11C,LIMD1,SLC9C1,CDC42EP3,FGD4,GRIK2,IGSF11,CCDC186,CLSTN2,ADGRL2,TANC1,CORO2B,GRIK4,MYO10,TAFA4,GABRG1,IREB2,FAM171A1,ATP10A,ARHGAP28,DISC1,SV2B,RIC3,FMN1,ARHGAP42,PIEZO2,GABRB1,SVIL,ASAP1,FRMPD4,FYN,SH3KBP1,AGO2,NALCN,CREBBP,SLC1A2,CADPS,GRIN2B,GRIA1,NEGR1,NAV2,FGF12,DGKB,CACNG2,TPM1,ESR1,GABRG3,ABCB5,TMOD2,PDE4D,TJP1,ERC2,PTPRT,PRKACB,RIMS1,FCHSD2,PARVB,DOCK4,NRXN1,WASF3,CPQ,WDPCP,MOSMO,RAPGEF4,CTTNBP2,FHOD3,GRID1,TNRC6B,SEL1L,SLC4A10,SYN2,ABCC9,GSG1L,ROCK1,CACNA1C,DNM3,SYT1,BBS2,ARHGAP32,PRKN,PTPRD,PTPRN2,TG,ADGRB3,DGKG,MYO3A,NTRK2,PLCB1,MAPK1,ATP9A,GRIK1,PRKG1,DSCAM,DGKI,DIP2B,TUT4,NLK,NBEA,PPFIA2,BCR,AKAP6,LARGE1,STX12,TBC1D1,SORCS3,SLC12A1,GNAQ,GRM5,MED1,ENPEP,AIMP1,ATP8A1,PID1,NLGN1,ABL1,GRID2,ERBIN,SEMA6D,FER,RYR2,PRLR,GRIK3,CACNB2,STXBP4,MTPN,MTMR2,KCNH5,FGF10,NOS1AP,RC3H2,VCL,ZDHHC21,XKR6,RAPGEF2,SHANK2,ILDR2,SYNJ1,GABRG2,ARFGEF1,ULK2,UNC13C,NRXN3,RIMS2,KCNQ3,SCN8A,NSG1,CPE,KCND2,SEMA5A,ATP8A2,SV2C,GRIA4,MAP4K4,CTNNA2,GPC6,ADGRV1,RELN,AKAP11,CYFIP2,SLC4A4,TNR,PTPN13,OCA2,CELF4,AKT3,VAV3,PRKCA,USP8,USH1C,ERC1,APP,PDLIM5,SLC6A3,EYA2,ADGRB1,GHRH,RAP1GDS1*

GO:0050804	modulation of chemical synaptic transmission	3.9240554465294744e-15	*TRIO,NETO2,PRKCB,DYSF,STAU2,CNTN4,SLC8A3,LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4,DISC1,SV2B,APBA2,FYN,NALCN,DLGAP1,GRIN2B,GRIA1,DGKB,CACNG2,BTBD9,ERC2,RIMS1,NRXN1,GRID1,SLC4A10,SYT1,PRKN,PTPRD,NTRK2,PLCB1,MAPK1,GRIK1,DGKI,PPFIA2,BCR,LARGE1,PLCL1,SORCS3,GRM5,NRG3,NLGN1,ABL1,GRID2,GRIK3,NTNG1,MTMR2,RAPGEF2,SHANK2,UNC13C,NRXN3,RIMS2,KCNQ3,DLGAP2,NSG1,SV2C,GRIA4,RELN,TNR,CELF4,USP8,ERC1,APP,ADGRB1*
GO:0099177	regulation of trans-synaptic signaling	4.3646625017282386e-15	*TRIO,NETO2,PRKCB,DYSF,STAU2,CNTN4,SLC8A3,LRRC4C,GRIK2,IGSF11,CLSTN2,GRIK4,DISC1,SV2B,APBA2,FYN,NALCN,DLGAP1,GRIN2B,GRIA1,DGKB,CACNG2,BTBD9,ERC2,RIMS1,NRXN1,GRID1,SLC4A10,SYT1,PRKN,PTPRD,NTRK2,PLCB1,MAPK1,GRIK1,DGKI,PPFIA2,BCR,LARGE1,PLCL1,SORCS3,GRM5,NRG3,NLGN1,ABL1,GRID2,GRIK3,NTNG1,MTMR2,RAPGEF2,SHANK2,UNC13C,NRXN3,RIMS2,KCNQ3,DLGAP2,NSG1,SV2C,GRIA4,RELN,TNR,CELF4,USP8,ERC1,APP,ADGRB1*
GO:0007165	signal transduction	2.4369065185324927e-14	*FSTL1,ERBB4,PDE6A,APBB2,FYB2,MACF1,PAK1,CTNND2,TRIO,MITF,EPN2,NETO2,PDE1C,EVC,NRP1,TEAD1,NFIA,CDH13,RC3H1,RPS6KA5,EPS8,TAOK3,OR4C46,ABL2,PRKCB,ARHGEF7,GPC5,MAML2,ARHGEF12,SAMD12,SLC8A1,LNPEP,ANKRD6,RERG,HTR2C,CNKSR3,LDLRAD4,SEMA3A,SLC8A3,MGAT5,STARD13,ALCAM,ERLIN2,LIMD1,PIK3C3,DCLK1,MAGI3,CDC42EP3,FGD4,GRIK2,SNX25,IGSF11,RGL1,MBD5,KIF16B,NCAM1,SIPA1L2,RCAN2,ADGRL2,GNG12,PAPPA,ITGA8,GRIK4,MYO10,PJA2,ASB3,TAFA4,GABRG1,TOM1L2,TTC21B,NEK6,SLC39A12,MOB1B,ARHGAP28,DISC1,RALGPS1,ARHGAP42,EYA1,KSR1,RORB,GPR158,GABRB1,ANKS1B,EDAR,FRMD6,RGS20,FYN,CREBBP,DLGAP1,SLIT3,RGS7,FHIT,GRIN2B,SRGAP2,STK32A,GRIA1,TRABD2B,TAFA5,SPRED1,MYO5A,SPEN,FGF12,DGKB,CACNG2,GARNL3,CRIM1,NOTCH2,FLNB,MADD,ESR1,GABRG3,NFAT5,TMOD2,PLCXD3,PDE4D,TJP1,ARHGAP26,PTPRT,PRKACB,GNG2,TRHDE,RIMS1,HIPK3,WSB1,SGMS1,LAMA1,JCAD,GLI3,DOCK4,MAST4,GAST,ITPR2,NRXN1,NTRK3,FBN1,WWOX,WDPCP,MAGI1,MOSMO,RAPGEF4,CNKSR2,NEK10,PIAS1,PRICKLE2,HMGA2,HHAT,GRID1,PARP8,SEL1L,PHLPP1,MYO1E,ZDHHC17,PKN2,ITGA4,GSG1L,ROCK1,DCDC1,DOCK1,CACNA1C,ARHGAP31,UBR1,RXRG,PRKAA2,ARHGEF11,SORCS1,COL4A2,BBS2,GRB10,ARHGAP32,PRKN,SIAH2,LATS2,DOCK9,PPP1R12B,RORA,PTPRD,CDC14B,TTR,TG,HDAC4,ADGRB3,INPP4B,DGKG,MYO9A,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,GRIK1,CUL5,PRKG1,DSCAM,BIRC6,DGKI,NLK,EGFR,BCR,MAGI2,AKAP6,LARGE1,ARHGEF28,PLCL1,MOK,IQCJ-SCHIP1,SORCS3,SCN2A,RNF152,CNTN1,ZNRF3,GNAQ,DOCK10,TENM3,ITPKB,GRM5,MED1,E*

			PHA6,ARAP2,AIMP1,NRG3,CPEB4,PID1,NLGN 1,ABL1,PTPRG,NCOR1,OR9Q1,GRID2,ELMO1, LRP2,ERBIN,SEMA6D,PPM1L,CABIN1,MBTPS2 ,FER,PAK5,RYR2,IL17RA,FBXL17,MCC,PRLR ,NFATC2,DST,GRIK3,STXBP4,GNG7,MTMR2,L RP12,MAPRE2,FGF10,NOS1AP,CADM1,SGCD,R C3H2,RIC8B,ATF6,STK32B,ZNF106,SEZ6L,Z DHHC21,VCAM1,RAPGEF2,RGS12,IFT81,SHAN K2,ZMYND11,RAPGEF5,INSR,SRGAP3,PDK1,A KAP13,KLF15,DENND4C,UNC5D,GABRG2,ARFG EF1,PATJ,ITGA9,ENPP1,ULK2,NRXN3,RIMS2 ,RHPN2,PPM1F,KCNQ3,DENND2B,DLGAP2,GFR A1,ATRNL1,GPR156,BMPR1B,NSG1,MAPKBP1, CPE,FCRLA,SEMA5A,KITLG,PYGO1,ARHGAP24 ,GRIA4,MAP4K4,CNIH3,DOCK3,PRAME,APC,G PC6,DNER,ADGRV1,RELN,AKAP11,ANXA4,AUT S2,ROR1,PPP2R3A,BMP2K,SNAI2,CYFIP2,ND FIP1,DTNA,CELF4,AKT3,VAV3,IL1R1,PRKCA ,INPP5A,USP8,CNTN6,FMN2,ERC1,APP,RPS6 KA3,SMAD5,PSD3,ALPK2,ASB2,EYA2,MAPK8I P1,ADGRB1,CCDC88A,GHRH,RAP1GDS1
GO:005117 9	localization	9.86822497 3489982e- 14	*SLMAP,ERBB4,KCNMA1,FYB2,CUBN,MACF1,SL C17A1,PAK1,SLC6A11,ATP9B,SETD2,SLC15A 5,SYNE2,EPN2,NETO2,DOP1B,NRP1,CDH13,T ANGO2,HERC2,ABL2,PRKCB,SLC23A2,ARHGEF 7,UTRN,GPC5,SLC8A1,LYPLA1,SLC2A13,HTR 2C,KCNC1,DYSF,STAU2,CACNA1E,SIAH3,TME M63C,FYCO1,TBC1D5,EXOC6B,AFG3L2,CNKSR 3,PLIN2,SLC8A3,RFX3,RBFOX1,SLC40A1,SL CO3A1,ATP11C,PIK3C3,DCLK1,DNAH11,SLC9 C1,ADAMTS9,NIPBL,CEP120,GRIK2,SNX25,I GSF11,CCDC186,MYO5C,KIF16B,NKAIN3,SLC 25A21,ODR4,CORO2B,EVI5,ITGA8,SYCP1,VP S41,GRIK4,MYO10,ASB3,TAFA4,GABRG1,TOM 1L2,IREB2,ATP10A,TTC21B,ABCD2,SLC39A1 2,COG2,DISC1,CLTCL1,SV2B,HECW2,RIC3,P IEZO2,SLC35F1,GPR158,GABRB1,TMEM241,A PBA2,LYST,SLC16A9,PLEKHA3,ATP2B2,FRMD 6,FYN,SH3KBP1,NALCN,CREBBP,SLC1A2,ZBT B16,CADPS,LRBA,RGS7,SGTB,GRIN2B,ANTXR 1,LRP1B,ARSB,GRIA1,AP5M1,MYO5A,FGF12, CACNG2,TSPAN33,BTBD9,NPIPA1,CLDN10,ES R1,GABRG3,ABCB5,SLC44A5,MEGF11,PDE4D, TJP1,ERC2,RIMS1,FCHSD2,GLI3,ITPR2,NRX N1,FRMD4A,FBN1,LONP2,TRAPPC10,WDPCP,R APGEF4,EHBP1,NEK10,DPP6,PRELID2,GRID1 ,CACNA2D3,SEL1L,SLC4A10,SYN2,MYO1E,SL C7A2,ZDHHC17,ITGA4,ABCC9,GSG1L,ROCK1, DOCK1,CACNA1C,PRKAA2,AMPH,RGPD4,SORCS 1,DNM3,PACRG,SYT1,BBS2,GRB10,SLC27A6, PRKN,TRPM7,LATS2,EXOC4,DLG2,SCFD2,BBS 9,PTPRN2,RANBP3L,TG,NTRK2,PLCB1,MAPK1 ,SDCBP,ATP9A,GRIK1,CUL5,PRKG1,DGKI,SP OP,NBEA,EGFR,PPFIA2,STXBP6,CLCN5,BCR, MAGI2,AKAP6,LARGE1,TRAPPC8,STX12,MELT F,TMPRSS3,ANKFY1,TBC1D1,SLC37A2,SLC12 A1,SCN2A,CNTN1,GRM5,MED1,GNPTAB,SPIRE 1,AIMP1,WDR72,SNX30,ATP8A1,PID1,NLGN1 ,ABL1,JARID2,MICAL3,GRID2,ELMO1,LRP2,*

			RANBP17,ERBIN,FER,MON2,RYR2,SCAMP1,LDLRAD3,MCC,PRLR,DST,GRIK3,CACNB2,STXBP4,VSTM2A,MTMR2,KCNH5,LRP12,MAPRE2,LRRC8B,FGF10,KIF13A,NOS1AP,SGCD,TRPM3,IPO11,VCL,ZDHHC21,XKR6,RAPGEF2,IFT81,INSR,UNC80,WDR41,ILDR2,IMMP2L,SYNJ1,KLF15,DENND4C,ATXN1,GABRG2,ARFGEF1,ENPP1,UNC13C,TANGO6,NRXN3,RIMS2,PPM1F,KCNQ3,SCN8A,SNX8,NSG1,CPE,KCND2,ATP8A2,SLC24A3,PYGO1,SV2C,GRIA4,MAP4K4,EFR3A,CNIH3,APC,APLF,GPC6,PARD3B,DNER,ABCA5,ADGRV1,RELN,AKAP11,VPS13C,KCNJ15,CEP112,CYBRD1,STON1-GTF2A1L,BMP2K,SLC4A4,NDFIP1,SNAP91,OCA2,CRB1,VAV3,FCHO2,RFTN2,HEPACAM,USP8,USH1C,DNAH5,KCNS3,FMN2,ERC1,APP,SLC6A3,DNAJC13,VPS13B,ABCA13,EYA2,MAPK8IP1,ADGRB1,CCDC88A,GHRH,RAP1GDS1
GO:0048468	cell development	1.0942844847376146e-13	*ERBB4,MACF1,PAK1,CTNND2,TRIO,MITF,SETD2,AMBRA1,ALPK3,NRP1,FRY,RC3H1,RPS6KA5,TAOK3,ABL2,SLC23A2,ARHGEF7,SLC8A1,EML1,STAU2,CNTN4,AFG3L2,SEMA3A,SLC8A3,RFX3,LRRC4C,ALCAM,ATP11C,LIMD1,DCLK1,SDC2,NCAM1,NEBL,SYCP1,IREB2,PBX1,PHACTR1,SLC39A12,DISC1,HECW2,RORB,GABRB1,NTM,ASAP1,FRMD6,FYN,ZBTB16,CSMD3,B4GALT6,SLIT3,SRGAP2,ARSB,NEGR1,SPEN,TPM1,NOTCH2,FLNB,TOX,PCDH15,ESR1,SRGAP2C,TMOD2,PDE4D,TJP1,RIMS1,LAMA1,GLI3,BRINP1,NRXN1,NTRK3,FBN1,WASF3,ARID1B,HYDIN,TSPAN2,WDPCP,PBX3,FHOD3,RERE,SLC4A10,ATL1,MYO1E,ZDHHC17,ITGA4,ROCK1,HERC1,DOCK1,DNM3,PACRG,SYT1,BBS2,ARHGAP32,PRKN,RORA,PTPRD,HDAC4,ADGRB3,DGKG,MYO9A,NTRK2,PLCB1,MAPK1,LAMB1,ATP9A,PRKG1,DSCAM,NFIB,DIP2B,TUT4,PPFIA2,PTPRQ,NCAM2,BCR,MAGI2,AKAP6,LARGE1,ARHGEF28,FUT9,MYT1L,CNTN1,DOCK10,TENM3,OPCML,ITPKB,GRM5,MED1,EPHA6,FNDC3A,NLGN1,ABL1,PTPRG,PAQR5,JAM2,GRID2,LRP2,SEMA6D,FER,ZNF160,NFATC2,FAT3,NTNG1,MTMR2,LRP12,SGCD,RC3H2,SP3,VCL,ZDHHC21,VCAM1,RAPGEF2,IFT81,AKAP13,UNC5D,FAT1,ULK2,NRXN3,RIMS2,KCNQ3,PGM5,GFRA1,BMPR1B,SEMA5A,ATP8A2,KITLG,PYGO1,MAP4K4,CTNNA2,DNER,ADGRV1,RELN,AUTS2,ROR1,SNAI2,CYFIP2,ADAMTSL1,NDFIP1,TNR,OCA2,CELF4,CRB1,PRKCA,USH1C,CNTN6,FMN2,APP,PDLIM5,SMAD5,NYAP2,VPS13B,ALPK2,ASB2,ADGRB1,CCDC88A,SPOCK1*
GO:0007417	central nervous system development	6.198223730240454e-13	*ERBB4,RTN1,SETD2,SYNE2,NRP1,MDGA2,EML1,KCNC1,CNTN4,SEMA3A,SLC8A3,CADM2,DCLK1,NIPBL,CEP120,KDM4B,ADGRL2,PBX1,PHACTR1,TTC21B,DISC1,GABRB1,FYN,SLC1A2,ZBTB16,B4GALT6,GRIN2B,SRGAP2,GRIA1,NAV2,TOX,SRGAP2C,ZSWIM6,GLI3,BRINP1,NRXN1,WASF3,HYDIN,TSPAN2,PBX3,RERE,SLC4A10,HERC1,BBS2,ARHGAP32,PRKN,FOXP2,RORA,NTRK2,PLCB1,MAPK1,LAMB1,BPTF,GRIK1,P*

			RKG1,NFIB,EGFR,BCR,LARGE1,ARHGEF28,SCN2A,CNTN1,POU6F2,MED1,CA10,NRG3,ABL1,JARID2,GRID2,LRP2,SEMA6D,MTPN,FGF10,SOX6,PCDH9,RAPGEF2,IMMP2L,SYNJ1,ATXN1,ZFHX3,BMPR1B,SEMA5A,CTNNA2,DNER,RELN,MACROD2,ROR1,TNR,AKT3,DNAH5,CNTN6,APP,RPS6KA3,SLC6A3,VPS13B,GHRH,ARNT2,SPOCK1
GO:0034329	cell junction assembly	1.94695706 53433832e-12	*ERBB4,MACF1,CTNND2,NRP1,CDH13,LRFN5,ARHGEF7,STAU2,CLSTN2,ADGRL2,CORO2B,FMN1,PEAK1,SRGAP2,GRIA1,NEGR1,CLDN10,SRGAP2C,TJP1,NRXN1,WDPCP,CDH20,PKN2,ROCK1,DNM3,PTPRD,TLN2,ADGRB3,MYO9A,NTRK2,SDCBP,DSCAM,BCR,LARGE1,NRG3,NLGN1,ABL1,GRID2,FER,DST,MPDZ,VCL,RAPGEF2,CDH7,SHANK2,GABRG2,PATJ,NRXN3,PPM1F,MAP4K4,APC,DNER,SNAI2,PTPN13,PRKCA,APP,PDLIM5,ADGRB1*
GO:0051716	cellular response to stimulus	2.27969171 93778696e-12	*FSTL1,ERBB4,PDE6A,APBB2,FYB2,MACF1,PAK1,CTNND2,TRIO,MITF,SETD2,AMBRA1,EPN2,NETO2,PDE1C,EVC,NRP1,TEAD1,NFIA,CDH13,RC3H1,RPS6KA5,EPS8,TAOK3,HERC2,OR4C46,ABL2,PRKCB,SLC23A2,ARHGEF7,GPC5,MAML2,ARHGEF12,SAMD12,SLC8A1,LNPEP,ANKRD6,RERG,HTR2C,KCNC1,STAU2,NEK4,USP14,CNKSR3,LDLRAD4,SEMA3A,PLIN2,SLC8A3,MGAT5,STARD13,SLC40A1,ALCAM,ERLIN2,LIMD1,PIK3C3,DCLK1,MAGI3,NIPBL,CDC42EP3,FGD4,GRIK2,SNX25,IGSF11,RGL1,CCDC186,MBD5,KIF16B,NCAM1,MARCHF6,SIPA1L2,RCAN2,ADGRL2,GNG12,CORO2B,PAPPA,ITGA8,SYCP1,VPS41,GRIK4,ZBTB20,MYO10,PJA2,ASB3,TAFA4,GABRG1,TOM1L2,TTC21B,NEK6,SLC39A12,MOB1B,ARHGAP28,DISC1,RALGPS1,ARHGAP42,EYA1,KSR1,RORB,PIEZO2,GPR158,ZNF236,GABRB1,ANKS1B,LYST,EDAR,ST8SIA1,FRMD6,RGS20,FYN,CREBBP,SLC1A2,DLGAP1,SLIT3,RGS7,FHIT,GRIN2B,SRGAP2,STK32A,GRIA1,TRABD2B,TAFA5,SPRED1,MYO5A,SPEN,FGF12,DGKB,CACNG2,GARNL3,TPM1,CRIM1,NOTCH2,FLNB,MADD,ESR1,GABRG3,NFAT5,TMOD2,PLCXD3,PDE4D,TJP1,ARHGAP26,PTPRT,PRKACB,GNG2,TRHDE,RIMS1,HIPK3,WSB1,SGMS1,LAMA1,JCAD,GLI3,DOCK4,MAST4,GAST,ITPR2,BRINP1,NRXN1,SUPT16H,NTRK3,FBN1,WWOX,ARID1B,MTUS1,WDPCP,MAGI1,MOSMO,RAPGEF4,CNKSR2,NEK10,PIAS1,PRICKLE2,HMGA2,HHAT,GRID1,PARP8,SEL1L,PHLPP1,MYO1E,ZDHHC17,PKN2,ITGA4,GSG1L,ROCK1,DCDC1,DOCK1,CACNA1C,ARHGAP31,UBR1,RXRG,PRKAA2,ARHGEF11,SORCS1,COL4A2,PACRG,SYT1,BBS2,GRB10,ARHGAP32,PRKN,DPF3,SIAH2,LATS2,DOCK9,DLG2,PPP1R12B,RORA,PTPRD,CDC14B,TTR,PTPRN2,TG,HDAC4,ADGRB3,INPP4B,DGKG,MYO9A,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,GRIK1,CUL5,PRKG1,DSCAM,BIRC6,DGKI,NLK,EGFR,BCR,MAGI2,AKAP6,LARGE1,FANCM,ARHGEF28,PLCL1,MOK,PXDNL,TBC1D1,IQCJ–*

			SCHIP1,SORCS3,SCN2A,ERP27,RNF152,CNTN 1,ZNRF3,GNAQ,DOCK10,TENM3,ITPKB,GRM5, MED1,EPHA6,SPIRE1,ARAP2,AIMP1,NRG3,CP EB4,PID1,NLGN1,ABL1,PTPRG,NCOR1,JARID 2,OR9Q1,GRID2,ELMO1,LRP2,ERBIN,SEMA6D ,PPM1L,CABIN1,MBTPS2,FER,PAK5,RYR2,IL 17RA,FBXL17,MCC,GLYAT,PRLR,HADHB,NFAT C2,DST,GRIK3,STXBP4,MTPN,GNG7,MTMR2,L RP12,MAPRE2,FGF10,NOS1AP,CADM1,SGCD,R C3H2,MSRA,RIC8B,ATF6,STK32B,ZNF106,SE Z6L,ZDHHC21,VCAM1,RAPGEF2,RGS12,IFT81 ,SHANK2,ZMYND11,RAPGEF5,INSR,SRGAP3,P DK1,AKAP13,IMMP2L,CHCHD6,KLF15,DENND4 C,UNC5D,GABRG2,ARFGEF1,PATJ,ITGA9,ENP P1,ULK2,NRXN3,RIMS2,RHPN2,PPM1F,KCNQ3 ,DENND2B,EGLN3,DLGAP2,GFRA1,ATRNL1,GP R156,BMPR1B,NSG1,MAPKBP1,CPE,KCND2,FC RLA,SEMA5A,KITLG,PYGO1,ARHGAP24,GRIA4 ,MAP4K4,CNIH3,DOCK3,PRAME,APC,APLF,GP C6,DNER,ADGRV1,RELN,MACROD2,AKAP11,VP S13C,ANXA4,NAT1,AUTS2,ROR1,PPP2R3A,MT MR3,BMP2K,SNAI2,CYFIP2,NDFIP1,TNR,PTP N13,DTNA,CELF4,AKT3,CRB1,VAV3,IL1R1,B CAS3,PRKCA,INPP5A,USP8,CNTN6,FMN2,ERC 1,APP,RPS6KA3,SMAD5,PSD3,ALPK2,ASB2,E YA2,MAPK8IP1,ADGRB1,CCDC88A,GHRH,RAP1 GDS1
GO:004866 7	cell morphogene sis involved in neuron differentiati on	2.76619379 55961964e- 12	*MACF1,PAK1,CTNND2,TRIO,NRP1,RPS6KA5,S TAU2,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM ,DCLK1,SDC2,NCAM1,PHACTR1,DISC1,HECW2 ,FYN,B4GALT6,SLIT3,NOTCH2,PCDH15,GLI3 ,NRXN1,WDPCP,RERE,ATL1,ZDHHC17,ITGA4, DNM3,ARHGAP32,PTPRD,ADGRB3,NTRK2,PRKG 1,DSCAM,NFIB,DIP2B,PPFIA2,PTPRQ,ARHGE F28,CNTN1,DOCK10,EPHA6,NLGN1,ABL1,SEM A6D,NTNG1,VCL,RAPGEF2,UNC5D,ULK2,NRXN 3,BMPR1B,SEMA5A,ATP8A2,CTNNA2,RELN,AU TS2,CYFIP2,ADAMTSL1,TNR,CNTN6,APP,PDL IM5,ADGRB1*
GO:005079 3	regulation of developmen tal process	4.86843614 0178604e- 12	*ERBB4,MACF1,PAK1,TRIO,MITF,AMBRA1,EPN 2,NRP1,RC3H1,EPS8,PRKCB,SLC23A2,ARHGE F7,SLC8A1,CDK12,ANKRD6,HTR2C,STAU2,CN TN4,AFG3L2,LDLRAD4,SEMA3A,RFX3,RBFOX1 ,LRRC4C,ATP11C,LIMD1,ADAMTS9,NIPBL,CD C42EP3,FGD4,MBD5,SDC2,CLSTN2,TCF12,AD GRL2,MYO10,TCF4,PBX1,FAM171A1,ATP10A, BICRAL,SLC39A12,DISC1,HECW2,EYA1,RORB ,ASAP1,ANKRD26,FYN,SH3KBP1,AGO2,ZBTB1 6,CSMD3,TAFA5,SPRED1,SPEN,TPM1,CRIM1, NOTCH2,TOX,ESR1,SRGAP2C,TJP1,RIMS1,PA RVB,LAMA1,JCAD,GLI3,BRINP1,NRXN1,FBN1 ,WASF3,ARID1B,WDPCP,MOSMO,PIAS1,PRICK LE2,HMGA2,ROCK1,GLIS1,COL4A2,DNM3,SYT 1,BBS2,ARHGAP32,PRKN,DPF3,LATS2,RORA, PTPRD,RANBP3L,TG,HDAC4,ADGRB3,DGKG,MY O9A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,SOX 5,DSCAM,NFIB,DIP2B,EGFR,PPFIA2,BCR,MA GI2,NELL1,AKAP6,ZNRF3,ITPKB,GRM5,MED1 ,SPIRE1,PID1,NLGN1,ABL1,JARID2,JAM2,G*

			RID2,LRP2,SEMA6D,SMOC1,PRLR,NFATC2,FAT3,NTNG1,MTPN,VSTM2A,MTMR2,FGF10,SOX6,RC3H2,VCL,ZDHHC21,RAPGEF2,INSR,ENPP1,ULK2,RIMS2,ZFHX3,BMPR1B,SEMA5A,ATP8A2,KITLG,MAP4K4,PRAME,APC,APLF,GPC6,ABCA5,ADGRV1,RELN,ROR1,BMP2K,SNAI2,NDFIP1,TNR,PTPN13,CELF4,AKT3,PRKCA,MRTFB,APP,PDLIM5,RPS6KA3,SMAD5,SLC6A3,ALPK2,ADGRB1,GHRH
GO:0016477	cell migration	7.557627387575634e-12	*FSTL1,ERBB4,MACF1,PAK1,MITF,SETD2,SYNE2,NRP1,CDH13,EPS8,ABL2,ARHGEF7,GPC5,DACH1,FRMD5,LDLRAD4,SEMA3A,MGAT5,STARD13,LIMD1,DCLK1,ADAMTS9,CDC42BPA,NIPBL,SDC2,TAFA4,PHACTR1,DISC1,PEAK1,LYST,FYN,SH3KBP1,AGO2,SRGAP2,ARSB,TAFA5,SPRED1,TPM1,SRGAP2C,TJP1,PTPRT,LAMA1,JCAD,GLI3,DOCK4,NTRK3,MTUS1,WDPCP,RERE,PKN2,ITGA4,ROCK1,DOCK1,GRB10,ARHGAP32,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,PRKG1,EGFR,BCR,MAGI2,LARGE1,FUT9,DOCK10,ENPEP,AIMP1,LDB2,NRG3,ATP8A1,ABL1,PTPRG,JAM2,SEMA6D,FER,PAK5,IL17RA,MCC,NFATC2,FAT3,NTNG1,LRP12,MAPRE2,FGF10,VCL,VCAM1,RAPGEF2,INSR,SRGAP3,UNC5D,FAT1,ITGA9,PPM1F,ASTN1,GFRA1,SEMA5A,KITLG,ARHGAP24,MAP4K4,CTNNA2,APC,GPC6,DNER,RELN,AUTS2,PPP2R3A,SNAI2,TNR,AKT3,VAV3,IL1R1,BCAS3,PRKCA,FMN2,APP,ASB2,ADGRB1,CCDC88A,SPOCK1*
GO:0035556	intracellular signal transduction	1.2308730856421943e-11	*ERBB4,APBB2,PAK1,TRIO,NRP1,TEAD1,CDH13,RC3H1,RPS6KA5,EPS8,TAOK3,ABL2,PRKCB,ARHGEF7,ARHGEF12,SLC8A1,LNPEP,ANKRD6,RERG,HTR2C,CNKSR3,SEMA3A,STARD13,LIMD1,PIK3C3,DCLK1,MAGI3,FGD4,GRIK2,RGL1,SIPA1L2,RCAN2,PJA2,ASB3,NEK6,MOB1B,ARHGAP28,DISC1,RALGPS1,ARHGAP42,KSR1,EDAR,FRMD6,FYN,CREBBP,RGS7,FHIT,GRIN2B,SRGAP2,STK32A,SPRED1,MYO5A,FGF12,DGKB,GARNL3,NOTCH2,MADD,ESR1,NFAT5,PDE4D,ARHGAP26,PRKACB,HIPK3,WSB1,SGMS1,JCAD,DOCK4,MAST4,NRXN1,NTRK3,WWOX,RAPGEF4,CNKSR2,NEK10,HMGA2,PHLPP1,ZDHHC17,PKN2,ROCK1,DCDC1,DOCK1,CACNA1C,ARHGAP31,UBR1,PRKAA2,ARHGEF11,GRB10,ARHGAP32,PRKN,SIAH2,LATS2,DOCK9,RORA,CDC14B,HDAC4,DGKG,MYO9A,FOXN3,NTRK2,PLCB1,MAPK1,SDCBP,CUL5,PRKG1,DGKI,NLK,EGFR,BCR,MAGI2,AKAP6,ARHGEF28,PLCL1,MOK,IQCJ-SCHIP1,SCN2A,RNF152,DOCK10,ITPKB,GRM5,NRG3,NLGN1,ABL1,NCOR1,ELMO1,LRP2,PPM1L,FER,PAK5,RYR2,NFATC2,MAPRE2,FGF10,NOS1AP,SGCD,RC3H2,STK32B,SEZ6L,VCAM1,RAPGEF2,SHANK2,ZMYND11,RAPGEF5,INSR,SRGAP3,PDK1,AKAP13,DENND4C,ARFGEF1,PATJ,PPM1F,DENND2B,MAPKBP1,SEMA5A,KITLG,ARHGAP24,MAP4K4,DOCK3,APC,ADGRV1,RELN,AKAP11,AUTS2,ROR1,SNAI2,NDFIP1,AKT3,VAV3,PRKCA,INPP5A,USP8,FMN2,ERC1,APP,RPS6KA3,SMAD5,PSD3,ASB2,MAPK8IP1,CCDC*

			88A,RAP1GDS1
GO:0051128	regulation of cellular component organization	1.697598478860012e-11	*MACF1,PAK1,SCAF8,KIRREL1,AMBRA1,SYNE2,MYO3B,NRP1,TEAD1,CDH13,RPS6KA5,EPS8,LRFN5,ABL2,SLC23A2,ARHGEF7,RERG,DYSF,STAU2,FYCO1,TBC1D5,SEMA3A,LRRC4C,CEP120,CDC42EP3,SDC2,CLSTN2,ADGRL2,TANC1,CORO2B,VPS41,MYO10,TOM1L2,ATP10A,NEK6,SLC39A12,ARHGAP28,DISC1,HECW2,FMN1,PEAK1,SVIL,ASAP1,FRMPD4,FYN,CSMD3,SLIT3,GRIN2B,ANTXR1,ARSB,TRABD2B,NEGR1,DGKB,KANSL1,BTBD9,TPM1,TOX,SRGAP2C,TMOD2,TJP1,ERC2,PTPRT,RIMS1,FCHSD2,LAMA1,NRXN1,NTRK3,WASF3,ARID1B,WDPCP,CTTNBP2,FHOD3,GRID1,GSG1L,ROCK1,PRKAA2,ARHGEF11,DNM3,SYT1,ARHGAP32,PRKN,DPF3,SACS,PTPRD,ADGRB3,DGKG,MYO9A,MYO3A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,DSCAM,DIP2B,EGFR,PPFIA2,STXBP6,BCR,MAGI2,AKAP6,MELTF,FUT9,ANKFY1,IQCJ-SCHIP1,CNTN1,TENM3,SPIRE1,SNX30,NRG3,ATP8A1,PID1,NLGN1,ABL1,PTPRG,GRID2,SEMA6D,FER,PAK5,SETDB2,NFATC2,FAT3,NTNG1,MTPN,MTMR2,MAPRE2,PDE4DIP,MPDZ,YLPM1,VCL,RAPGEF2,SHANK2,INSR,AKAP13,SYNJ1,ARFGEF1,PATJ,ENPP1,ULK2,RIMS2,RHPN2,PPM1F,SEMA5A,ATP8A2,ARHGAP24,MAP4K4,CTNNA2,APC,RELN,VPS13C,AUTS2,ROR1,MTMR3,BMP2K,SNAI2,CYFIP2,TNR,PTPN13,SNAP91,BCAS3,USP8,USH1C,APP,PDLIM5,RPS6KA3,ABCA13,ADGRB1,CCDC88A,RAP1GDS1,SPOCK1*
GO:0007420	brain development	3.6708179356983265e-11	*ERBB4,RTN1,SETD2,SYNE2,NRP1,EML1,KCNC1,CNTN4,SEMA3A,CADM2,DCLK1,NIPBL,CEP120,KDM4B,ADGRL2,PBX1,PHACTR1,TTC21B,DISC1,FYN,SLC1A2,GRIN2B,SRGAP2,GRIA1,TOX,SRGAP2C,ZSWIM6,GLI3,NRXN1,HYDIN,PBX3,RERE,SLC4A10,HERC1,BBS2,ARHGAP32,FOXP2,RORA,NTRK2,PLCB1,LAMB1,BPTF,PRKG1,NFIB,EGFR,BCR,LARGE1,SCN2A,CNTN1,MED1,CA10,NRG3,ABL1,GRID2,LRP2,SEMA6D,MTPN,FGF10,SOX6,PCDH9,RAPGEF2,IMMP2L,SYNJ1,ATXN1,ZFHX3,SEMA5A,CTNNA2,RELN,MACROD2,TNR,AKT3,DNAH5,APP,SLC6A3,GHRH,ARNT2*
GO:0030029	actin filament-based process	5.3439470999962476e-11	*PAK1,FRMD3,KIRREL1,SYNE2,MYO3B,NRP1,EPS8,PHACTR3,STAU2,FRMD5,STARD13,CDC42BPA,CDC42EP3,HMCN1,FGD4,MYO5C,CORO2B,NEBL,FAM171A1,PHACTR1,ARHGAP28,FMN1,SVIL,FRMPD4,FRMD6,SH3KBP1,SRGAP2,MYO5A,FGF12,TPM1,FLNB,PCDH15,TMOD2,PDE4D,TJP1,ARHGAP26,FCHSD2,WASF3,FHOD3,MYO1E,ABCC9,ROCK1,CACNA1C,ARHGEF11,PRKN,TRPM7,MYO3A,SDCBP,PRKG1,BCR,SPIRE1,PHACTR2,ABL1,MICAL3,ELMO1,FER,RYR2,CACNB2,MTPN,NOS1AP,SGCD,AKAP13,ARFGEF1,FAT1,RHPN2,PPM1F,PGM5,SEMA5A,CTNNA2,AKAP11,CYFIP2,BCAS3,USH1C,FMN2,PDLIM5,CCDC88A,RAP1GDS1*
GO:000681	transport	5.63345824	*SLMAP,ERBB4,KCNMA1,CUBN,MACF1,SLC17A1*

0		450553e-11	*,PAK1,SLC6A11,ATP9B,SETD2,SLC15A5,SYNE2,EPN2,DOP1B,NRP1,CDH13,TANGO2,HERC2,ABL2,PRKCB,SLC23A2,ARHGEF7,UTRN,SLC8A1,LYPLA1,SLC2A13,HTR2C,KCNC1,DYSF,STAU2,CACNA1E,SIAH3,TMEM63C,FYCO1,TBC1D5,EXOC6B,AFG3L2,CNKSR3,PLIN2,SLC8A3,RFX3,RBFOX1,SLC40A1,SLCO3A1,ATP11C,PIK3C3,DCLK1,DNAH11,SLC9C1,ADAMTS9,CEP120,GRIK2,SNX25,CCDC186,MYO5C,KIF16B,NKAIN3,SLC25A21,EVI5,VPS41,GRIK4,MYO10,TAFA4,GABRG1,TOM1L2,IREB2,ATP10A,TTC21B,ABCD2,SLC39A12,COG2,CLTCL1,SV2B,HECW2,PIEZO2,SLC35F1,GABRB1,TMEM241,APBA2,LYST,SLC16A9,PLEKHA3,ATP2B2,FYN,SH3KBP1,NALCN,SLC1A2,CADPS,RGS7,SGTB,GRIN2B,ANTXR1,LRP1B,ARSB,GRIA1,AP5M1,MYO5A,FGF12,CACNG2,BTBD9,NPIPA1,CLDN10,GABRG3,ABCB5,SLC44A5,MEGF11,PDE4D,ERC2,RIMS1,FCHSD2,GLI3,ITPR2,NRXN1,FRMD4A,LONP2,TRAPPC10,WDPCP,RAPGEF4,EHBP1,NEK10,DPP6,PRELID2,GRID1,CACNA2D3,SEL1L,SLC4A10,SYN2,MYO1E,SLC7A2,ZDHHC17,ITGA4,ABCC9,GSG1L,ROCK1,DOCK1,CACNA1C,AMPH,RGPD4,SORCS1,DNM3,SYT1,BBS2,GRB10,SLC27A6,PRKN,TRPM7,EXOC4,DLG2,SCFD2,BBS9,PTPRN2,RANBP3L,TG,NTRK2,PLCB1,MAPK1,SDCBP,ATP9A,GRIK1,CUL5,PRKG1,DGKI,EGFR,PPFIA2,STXBP6,CLCN5,BCR,MAGI2,AKAP6,LARGE1,TRAPPC8,STX12,MELTF,TMPRSS3,ANKFY1,TBC1D1,SLC37A2,SLC12A1,SCN2A,CNTN1,GRM5,MED1,GNPTAB,SPIRE1,AIMP1,SNX30,ATP8A1,PID1,NLGN1,ABL1,MICAL3,GRID2,ELMO1,LRP2,RANBP17,ERBIN,FER,MON2,RYR2,SCAMP1,LDLRAD3,PRLR,DST,GRIK3,CACNB2,STXBP4,MTMR2,KCNH5,LRP12,LRRC8B,FGF10,KIF13A,NOS1AP,TRPM3,IPO11,ZDHHC21,XKR6,IFT81,INSR,UNC80,WDR41,ILDR2,IMMP2L,SYNJ1,KLF15,DENND4C,ATXN1,GABRG2,ARFGEF1,ENPP1,UNC13C,TANGO6,NRXN3,RIMS2,PPM1F,KCNQ3,SCN8A,SNX8,NSG1,CPE,KCND2,ATP8A2,SLC24A3,SV2C,GRIA4,MAP4K4,CNIH3,DNER,ABCA5,RELN,VPS13C,KCNJ15,CYBRD1,STON1-GTF2A1L,BMP2K,SLC4A4,NDFIP1,SNAP91,OCA2,VAV3,FCHO2,RFTN2,DNAH5,KCNS3,FMN2,ERC1,APP,SLC6A3,DNAJC13,VPS13B,ABCA13,EYA2,MAPK8IP1,ADGRB1,CCDC88A,GHRH,RAP1GDS1*
GO:0048870	cell motility	9.966940485489741e-11	*FSTL1,ERBB4,MACF1,PAK1,MITF,SETD2,SYNE2,NRP1,CDH13,EPS8,ABL2,ARHGEF7,GPC5,DACH1,FRMD5,LDLRAD4,SEMA3A,RFX3,MGAT5,STARD13,LIMD1,DCLK1,DNAH11,SLC9C1,ADAMTS9,CDC42BPA,NIPBL,SDC2,TAFA4,PHACTR1,DISC1,PEAK1,LYST,FYN,SH3KBP1,AGO2,SRGAP2,ARSB,TAFA5,SPRED1,TPM1,SRGAP2C,TJP1,PTPRT,LAMA1,JCAD,GLI3,DOCK4,NTRK3,MTUS1,WDPCP,RERE,PKN2,ITGA4,ROCK1,DOCK1,BBS2,GRB10,ARHGAP32,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,PRKG1,EGFR,BCR,MAG*

			I2,LARGE1,FUT9,DOCK10,ENPEP,AIMP1,LDB 2,NRG3,ATP8A1,ABL1,PTPRG,JAM2,ELMO1,S EMA6D,FER,PAK5,IL17RA,MCC,NFATC2,DST, FAT3,NTNG1,LRP12,MAPRE2,FGF10,VCL,VCA M1,RAPGEF2,IFT81,INSR,SRGAP3,UNC5D,FA T1,ITGA9,PPM1F,ASTN1,GFRA1,SEMA5A,KIT LG,ARHGAP24,MAP4K4,CTNNA2,APC,GPC6,DN ER,RELN,AUTS2,PPP2R3A,SNAI2,TNR,AKT3, VAV3,IL1R1,BCAS3,PRKCA,DNAH5,FMN2,APP ,ASB2,ADGRB1,CCDC88A,SPOCK1
GO:005123 4	establishme nt of localization	1.33117371 53378688e- 10	*SLMAP,ERBB4,KCNMA1,CUBN,MACF1,SLC17A1 ,PAK1,SLC6A11,ATP9B,SETD2,SLC15A5,SYN E2,EPN2,DOP1B,NRP1,CDH13,TANGO2,HERC2 ,ABL2,PRKCB,SLC23A2,ARHGEF7,UTRN,SLC8 A1,LYPLA1,SLC2A13,HTR2C,KCNC1,DYSF,ST AU2,CACNA1E,SIAH3,TMEM63C,FYCO1,TBC1D 5,EXOC6B,AFG3L2,CNKSR3,PLIN2,SLC8A3,R FX3,RBFOX1,SLC40A1,SLCO3A1,ATP11C,PIK 3C3,DCLK1,DNAH11,SLC9C1,ADAMTS9,NIPBL ,CEP120,GRIK2,SNX25,CCDC186,MYO5C,KIF 16B,NKAIN3,SLC25A21,CORO2B,EVI5,ITGA8 ,VPS41,GRIK4,MYO10,TAFA4,GABRG1,TOM1L 2,IREB2,ATP10A,TTC21B,ABCD2,SLC39A12, COG2,CLTCL1,SV2B,HECW2,PIEZO2,SLC35F1 ,GABRB1,TMEM241,APBA2,LYST,SLC16A9,PL EKHA3,ATP2B2,FYN,SH3KBP1,NALCN,SLC1A2 ,CADPS,RGS7,SGTB,GRIN2B,ANTXR1,LRP1B, ARSB,GRIA1,AP5M1,MYO5A,FGF12,CACNG2,B TBD9,NPIPA1,CLDN10,GABRG3,ABCB5,SLC44 A5,MEGF11,PDE4D,ERC2,RIMS1,FCHSD2,GLI 3,ITPR2,NRXN1,FRMD4A,LONP2,TRAPPC10,W DPCP,RAPGEF4,EHBP1,NEK10,DPP6,PRELID2 ,GRID1,CACNA2D3,SEL1L,SLC4A10,SYN2,MY O1E,SLC7A2,ZDHHC17,ITGA4,ABCC9,GSG1L, ROCK1,DOCK1,CACNA1C,AMPH,RGPD4,SORCS1 ,DNM3,SYT1,BBS2,GRB10,SLC27A6,PRKN,TR PM7,EXOC4,DLG2,SCFD2,BBS9,PTPRN2,RANB P3L,TG,NTRK2,PLCB1,MAPK1,SDCBP,ATP9A, GRIK1,CUL5,PRKG1,DGKI,EGFR,PPFIA2,STX BP6,CLCN5,BCR,MAGI2,AKAP6,LARGE1,TRAP PC8,STX12,MELTF,TMPRSS3,ANKFY1,TBC1D1 ,SLC37A2,SLC12A1,SCN2A,CNTN1,GRM5,MED 1,GNPTAB,SPIRE1,AIMP1,SNX30,ATP8A1,PI D1,NLGN1,ABL1,MICAL3,GRID2,ELMO1,LRP2 ,RANBP17,ERBIN,FER,MON2,RYR2,SCAMP1,L DLRAD3,MCC,PRLR,DST,GRIK3,CACNB2,STXB P4,MTMR2,KCNH5,LRP12,LRRC8B,FGF10,KIF 13A,NOS1AP,TRPM3,IPO11,ZDHHC21,XKR6,I FT81,INSR,UNC80,WDR41,ILDR2,IMMP2L,SY NJ1,KLF15,DENND4C,ATXN1,GABRG2,ARFGEF 1,ENPP1,UNC13C,TANGO6,NRXN3,RIMS2,PPM 1F,KCNQ3,SCN8A,SNX8,NSG1,CPE,KCND2,AT P8A2,SLC24A3,SV2C,GRIA4,MAP4K4,CNIH3, APC,PARD3B,DNER,ABCA5,ADGRV1,RELN,VPS 13C,KCNJ15,CYBRD1,STON1- GTF2A1L,BMP2K,SLC4A4,NDFIP1,SNAP91,OC A2,VAV3,FCHO2,RFTN2,DNAH5,KCNS3,FMN2, ERC1,APP,SLC6A3,DNAJC13,VPS13B,ABCA13 ,EYA2,MAPK8IP1,ADGRB1,CCDC88A,GHRH,RA*

			`P1GDS1`
GO:006032 2	head development	3.52322557 03319106e-10	`ERBB4,RTN1,SETD2,SYNE2,NRP1,EML1,KCNC 1,CNTN4,SEMA3A,CADM2,DCLK1,NIPBL,CEP1 20,KDM4B,ADGRL2,PBX1,PHACTR1,TTC21B,D ISC1,FYN,SLC1A2,GRIN2B,SRGAP2,GRIA1,T OX,SRGAP2C,ZSWIM6,GLI3,NRXN1,HYDIN,PB X3,RERE,SLC4A10,HERC1,BBS2,ARHGAP32,F OXP2,RORA,NTRK2,PLCB1,MAPK1,LAMB1,BPT F,PRKG1,NFIB,EGFR,BCR,LARGE1,SCN2A,CN TN1,MED1,CA10,NRG3,ABL1,GRID2,LRP2,SE MA6D,MTPN,FGF10,SOX6,PCDH9,RAPGEF2,IM MP2L,SYNJ1,ATXN1,ZFHX3,SEMA5A,CTNNA2, RELN,MACROD2,TNR,AKT3,DNAH5,APP,SLC6A 3,GHRH,ARNT2`
GO:000761 0	behavior	1.10488621 04561557e-9	`EPS8,ABL2,DACH1,HTR2C,SLC8A3,DNAH11,G RIK2,MBD5,CLSTN2,TANC1,ITGA8,PJA2,TTC 21B,APBA2,FYN,SLC1A2,GRIN2B,GRIA1,NEG R1,NAV2,FGF12,BTBD9,PCDH15,TMOD2,GLI3 ,BRINP1,NRXN1,PIAS1,PBX3,GRID1,SLC4A1 0,BBS2,PRKN,ADGRB3,NTRK2,PLCB1,MAPK1, DSCAM,DGKI,EGFR,LARGE1,SORCS3,SCN2A,C NTN1,GRM5,ATP8A1,NLGN1,ABL1,NCOR1,PAK 5,GNG7,SHANK2,INSR,SYNJ1,ATXN1,GABRG2 ,NRXN3,KCNQ3,ZFHX3,ASTN1,KCND2,ATP8A2 ,RELN,TNR,APP,SLC6A3,GHRH`
GO:000828 3	cell population proliferation	1.15475721 71847763e-9	`HPSE2,ERBB4,MACF1,PAK1,CTNND2,TRIO,MI TF,AMBRA1,SYNE2,MYO3B,NRP1,NFIA,FRY,C DH13,RC3H1,RPS6KA5,EPS8,TAOK3,ABL2,SL C23A2,ARHGEF7,DACH1,EML1,RERG,STAU2,C NTN4,AFG3L2,SEMA3A,RFX3,MMP16,LRRC4C, ALCAM,DCLK1,CEP120,CDC42EP3,FGD4,SDC2 ,NCAM1,TANC1,ITGA8,MYO10,PBX1,PHACTR1 ,BICRAL,TTC21B,ABCD2,SLC39A12,DISC1,H ECW2,EYA1,KSR1,ASAP1,ST8SIA1,FYN,ZBTB 16,CSMD3,B4GALT6,SLIT3,GRIN2B,SRGAP2, ARSB,TAFA5,NEGR1,TPM1,NOTCH2,TOX,PCDH 15,ESR1,SRGAP2C,TJP1,GNG2,RIMS1,PARVB ,LAMA1,JCAD,GLI3,NRXN1,NTRK3,WASF3,HY DIN,TSPAN2,WDPCP,PIAS1,HMGA2,RERE,ATL 1,ZDHHC17,PKN2,ITGA4,ROCK1,HERC1,CFAP 70,DNM3,SYT1,BBS2,ARHGAP32,PRKN,RORA, PTPRD,CDC14B,BBS9,HDAC4,ADGRB3,DGKG,M YO9A,MYO3A,NTRK2,MAPK1,LAMB1,SDCBP,AT P9A,SOX5,PRKG1,DSCAM,BIRC6,NFIB,DIP2B ,EGFR,PPFIA2,NCAM2,MAGI2,NELL1,RTTN,A RHGEF28,FUT9,CNTN1,ZNRF3,DOCK10,TENM3 ,ITPKB,MED1,ENPEP,EPHA6,AIMP1,PID1,NL GN1,ABL1,PTPRG,JARID2,GRID2,LRP2,SEMA 6D,FER,PAK5,MCC,PRLR,NFATC2,FAT3,STXB P4,NTNG1,VSTM2A,MTMR2,LRP12,FGF10,RC3 H2,VCL,VCAM1,RAPGEF2,IFT81,SHANK2,INS R,PDK1,UNC5D,ULK2,NRXN3,RIMS2,EGLN3,G FRA1,BMPR1B,SEMA5A,ATP8A2,KITLG,ARHGA P24,MAP4K4,CTNNA2,PRAME,APC,ADGRV1,RE LN,AUTS2,ROR1,SNAI2,CYFIP2,ADAMTSL1,N DFIP1,TNR,OCA2,AKT3,VAV3,PRKCA,USH1C, DNAH5,CNTN6,ENPP3,APP,PDLIM5,NYAP2,VP S13B,MAPK8IP1,ADGRB1,CCDC88A,GHRH,SPO CK1`

GO:003134 4	regulation of cell projection organization	1.36815773 23394312e- 9	MACF1,PAK1,SYNE2,MYO3B,NRP1,EPS8,ABL2 ,ARHGEF7,STAU2,SEMA3A,LRRC4C,CEP120,C DC42EP3,SDC2,MYO10,SLC39A12,DISC1,HEC W2,FYN,CSMD3,GRIN2B,ARSB,NEGR1,TOX,SR GAP2C,NRXN1,NTRK3,WDPCP,DNM3,ARHGAP32 ,PTPRD,ADGRB3,DGKG,MYO9A,MYO3A,NTRK2, DSCAM,DIP2B,PPFIA2,MAGI2,FUT9,CNTN1,T ENM3,NLGN1,ABL1,PTPRG,GRID2,SEMA6D,FE R,FAT3,NTNG1,RAPGEF2,ULK2,SEMA5A,ATP8 A2,ARHGAP24,MAP4K4,CTNNA2,APC,RELN,AU TS2,ROR1,TNR,USH1C,PDLIM5,CCDC88A,SPO CK1
GO:000996 6	regulation of signal transduction	1.38694868 99101463e- 9	FSTL1,ERBB4,MACF1,PAK1,CTNND2,TRIO,EP N2,NETO2,EVC,NRP1,CDH13,RC3H1,EPS8,TA OK3,ABL2,PRKCB,GPC5,ARHGEF12,ANKRD6,H TR2C,CNKSR3,LDLRAD4,SEMA3A,SLC8A3,MGA T5,STARD13,LIMD1,FGD4,GRIK2,SNX25,IGS F11,MBD5,NCAM1,SIPA1L2,ITGA8,PJA2,TAF A4,TTC21B,NEK6,ARHGAP28,DISC1,RALGPS1 ,ARHGAP42,EYA1,KSR1,EDAR,FRMD6,RGS20, FYN,CREBBP,DLGAP1,SLIT3,RGS7,GRIN2B,S RGAP2,TRABD2B,SPRED1,CACNG2,GARNL3,CR IM1,NOTCH2,MADD,ESR1,NFAT5,TMOD2,PDE4 D,ARHGAP26,PTPRT,PRKACB,RIMS1,HIPK3,S GMS1,LAMA1,JCAD,GLI3,NRXN1,NTRK3,FBN1 ,WWOX,MOSMO,CNKSR2,NEK10,PHLPP1,ZDHHC 17,GSG1L,ROCK1,ARHGAP31,UBR1,PRKAA2,A RHGEF11,GRB10,ARHGAP32,PRKN,SIAH2,LAT S2,RORA,PTPRD,DGKG,MYO9A,NTRK2,PLCB1, MAPK1,LAMB1,SDCBP,BIRC6,DGKI,NLK,EGFR ,BCR,MAGI2,AKAP6,ARHGEF28,IQCJ- SCHIP1,RNF152,ZNRF3,GNAQ,ITPKB,GRM5,M ED1,PID1,NLGN1,ABL1,NCOR1,LRP2,ERBIN, FER,PAK5,FBXL17,MCC,PRLR,GNG7,MTMR2,M APRE2,FGF10,NOS1AP,CADM1,RC3H2,RIC8B, ATF6,SEZ6L,RAPGEF2,RGS12,IFT81,SHANK2 ,ZMYND11,INSR,SRGAP3,AKAP13,KLF15,DEN ND4C,ARFGEF1,ENPP1,RIMS2,DENND2B,DLGA P2,BMPR1B,MAPKBP1,SEMA5A,KITLG,ARHGAP 24,MAP4K4,CNIH3,DOCK3,PRAME,APC,GPC6, ADGRV1,RELN,AUTS2,ROR1,PPP2R3A,BMP2K, SNAI2,CYFIP2,NDFIP1,CELF4,AKT3,VAV3,I L1R1,PRKCA,USP8,CNTN6,APP,SMAD5,PSD3, ALPK2,EYA2,MAPK8IP1,CCDC88A,GHRH,RAP1 GDS1
GO:012003 5	regulation of plasma membrane bounded cell projection organization	1.41633108 98375232e- 9	MACF1,PAK1,SYNE2,MYO3B,NRP1,EPS8,ABL2 ,ARHGEF7,STAU2,SEMA3A,LRRC4C,CEP120,C DC42EP3,SDC2,MYO10,SLC39A12,DISC1,HEC W2,FYN,CSMD3,GRIN2B,ARSB,NEGR1,TOX,SR GAP2C,NRXN1,NTRK3,WDPCP,DNM3,ARHGAP32 ,PTPRD,ADGRB3,DGKG,MYO3A,NTRK2,DSCAM, DIP2B,PPFIA2,MAGI2,FUT9,CNTN1,TENM3,N LGN1,ABL1,PTPRG,GRID2,SEMA6D,FER,FAT3 ,NTNG1,RAPGEF2,ULK2,SEMA5A,ATP8A2,ARH GAP24,MAP4K4,CTNNA2,APC,RELN,AUTS2,RO R1,TNR,USH1C,PDLIM5,CCDC88A,SPOCK1
GO:000726 4	small GTPase	1.95491219 53819947e-	TRIO,NRP1,CDH13,EPS8,ABL2,ARHGEF12,RE RG,STARD13,FGD4,RGL1,SIPA1L2,ARHGAP28 ,RALGPS1,ARHGAP42,KSR1,SRGAP2,GARNL3,

	mediated signal transduction	9	NOTCH2,MADD,ARHGAP26,DOCK4,RAPGEF4,ROCK1,DOCK1,ARHGAP31,ARHGEF11,ARHGAP32,SIAH2,DOCK9,MYO9A,SDCBP,DGKI,BCR,ARHGEF28,DOCK10,ITPKB,ABL1,ELMO1,MAPRE2,FGF10,RAPGEF2,RAPGEF5,SRGAP3,AKAP13,DENND4C,ARFGEF1,KITLG,ARHGAP24,MAP4K4,DOCK3,RELN,AUTS2,VAV3,USP8,PSD3,CCDC88A
GO:0030036	actin cytoskeleton organization	6.256648777188123e-9	PAK1,FRMD3,KIRREL1,MYO3B,NRP1,EPS8,PHACTR3,STAU2,FRMD5,STARD13,CDC42BPA,CDC42EP3,HMCN1,FGD4,MYO5C,CORO2B,NEBL,FAM171A1,PHACTR1,ARHGAP28,FMN1,SVIL,FRMPD4,SH3KBP1,MYO5A,TPM1,FLNB,PCDH15,TMOD2,TJP1,ARHGAP26,FCHSD2,WASF3,FHOD3,MYO1E,ROCK1,ARHGEF11,PRKN,TRPM7,MYO3A,SDCBP,PRKG1,BCR,SPIRE1,PHACTR2,ABL1,MICAL3,ELMO1,FER,MTPN,NOS1AP,AKAP13,ARFGEF1,FAT1,RHPN2,PPM1F,PGM5,SEMA5A,CTNNA2,AKAP11,CYFIP2,BCAS3,USH1C,FMN2,PDLIM5,CCDC88A,RAP1GDS1
GO:0003008	system process	6.607549872963021e-9	SLMAP,KCNMA1,PDE6A,APBB2,KIRREL1,NETO2,DOP1B,MYO3B,OR4C46,UTRN,SLC8A1,LNPEP,SLC2A13,HTR2C,TMEM63C,SLC8A3,RBFOX1,SLCO3A1,DNAH11,NIPBL,HMCN1,GRIK2,IGSF11,CLSTN2,TANC1,CORO2B,ITGA8,PJA2,ASB3,TAFA4,GABRG1,IREB2,ARHGAP42,EYA1,RORB,PIEZO2,GABRB1,ATP2B2,FYN,SLC1A2,DLGAP1,GRIN2B,GRIA1,NAV2,FGF12,CACNG2,BTBD9,TPM1,PCDH15,GABRG3,TMOD2,PDE4D,TJP1,LRIG1,PRKACB,RIMS1,DOCK4,BRINP1,NRXN1,SGCG,WASF3,NEK10,PIAS1,PBX3,SLC4A10,MYO1E,SLC7A2,ABCC9,ROCK1,HERC1,CACNA1C,ARHGEF11,BBS2,PRKN,PPP1R12B,BBS9,HDAC4,ADGRB3,MYO9A,MYO3A,NTRK2,PLCB1,MAPK1,PRKG1,DGKI,EGFR,PTPRQ,CLCN5,BCR,AKAP6,LARGE1,TMPRSS3,SORCS3,SCN2A,POU6F2,GRM5,ENPEP,ATP8A1,NLGN1,ABL1,JARID2,OR9Q1,JAM2,GRID2,LRP2,PAK5,RYR2,CACNB2,MTPN,MTMR2,FGF10,NOS1AP,SGCD,ATF6,EYS,ZDHHC21,SHANK2,INSR,AKAP13,IMMP2L,PPIP5K2,SYNJ1,KLF15,ATXN1,GABRG2,NRXN3,RIMS2,RHPN2,KCNQ3,SCN8A,DLGAP2,KCND2,ATP8A2,SLC24A3,LHFPL3,CTNNA2,ADGRV1,RELN,AKAP11,ROR1,SNAI2,SLC4A4,TNR,DTNA,CELF4,CRB1,PRKCA,USH1C,APP,PDLIM5,SMAD5,SLC6A3,ASB2,RAP1GDS1
GO:0050896	response to stimulus	7.662408963409832e-9	FSTL1,ERBB4,KCNMA1,PDE6A,APBB2,FYB2,CUBN,MACF1,PAK1,CTNND2,SLC6A11,TRIO,MITF,SETD2,AMBRA1,EPN2,NETO2,PDE1C,MYO3B,EVC,NRP1,TEAD1,NFIA,CDH13,RC3H1,RPS6KA5,EPS8,TAOK3,HERC2,LRFN5,OR4C46,ABL2,PRKCB,SLC23A2,ARHGEF7,GPC5,MAML2,ARHGEF12,SAMD12,SLC8A1,DACH1,LNPEP,ANKRD6,RERG,HTR2C,KCNC1,DYSF,STAU2,NEK4,TBC1D5,USP14,AFG3L2,CNKSR3,LDLRAD4,SEMA3A,PLIN2,SLC8A3,MGAT5,STARD13,SLC40A1,ALCAM,ERLIN2,LIMD1,PIK3C3,DCLK1,ADAMTS9,MAGI3,NIPBL,CDC42EP3,HMCN1,FGD4,GRIK2,SNX25,IGSF11,RGL1,CCDC186,MBD5

			,KIF16B,NCAM1,TCF12,MARCHF6,SIPA1L2,RCAN2,ADGRL2,GNG12,TANC1,CORO2B,PAPPA,ITGA8,SYCP1,VPS41,GRIK4,ZBTB20,MYO10,PJA2,ASB3,TAFA4,NAALADL2,GABRG1,TOM1L2,TTC21B,NEK6,ABCD2,SLC39A12,MOB1B,ARHGAP28,DISC1,RALGPS1,ARHGAP42,EYA1,KSR1,RORB,PIEZO2,GPR158,ZNF236,GABRB1,ANKS1B,LYST,EDAR,ST8SIA1,FRMD6,RGS20,FYN,CREBBP,SLC1A2,DLGAP1,SLIT3,RGS7,FHIT,GRIN2B,SRGAP2,STK32A,ARSB,GRIA1,TRABD2B,TAFA5,SPRED1,MYO5A,SPEN,FGF12,DGKB,CACNG2,GARNL3,TPM1,CRIM1,NOTCH2,FLNB,MADD,PCDH15,ESR1,GABRG3,FKBP5,NFAT5,TMOD2,PLCXD3,PDE4D,TJP1,ARHGAP26,PTPRT,PRKACB,GNG2,TRHDE,RIMS1,HIPK3,WSB1,SGMS1,LAMA1,JCAD,GLI3,DOCK4,MAST4,GAST,ITPR2,BRINP1,NRXN1,SUPT16H,NTRK3,FBN1,WWOX,LONP2,ARID1B,MTUS1,TSPAN2,WDPCP,MAGI1,MOSMO,RAPGEF4,CNKSR2,NEK10,PIAS1,PRICKLE2,HMGA2,HHAT,GRID1,PARP8,SEL1L,SLC4A10,PHLPP1,MYO1E,ZDHHC17,PKN2,ITGA4,ABCC9,GSG1L,ROCK1,DCDC1,DOCK1,CACNA1C,ARHGAP31,UBR1,RXRG,PRKAA2,ARHGEF11,SORCS1,COL4A2,PACRG,SYT1,BBS2,GRB10,ARHGAP32,PRKN,DPF3,SIAH2,LATS2,DOCK9,DLG2,PPP1R12B,RORA,PTPRD,CDC14B,TTR,BBS9,PTPRN2,TG,HDAC4,ADGRB3,INPP4B,DGKG,MYO9A,MYO3A,FOXN3,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,BPTF,GRIK1,CUL5,SOX5,PRKG1,DSCAM,BIRC6,DGKI,NFIB,NLK,EGFR,PTPRQ,BCR,MAGI2,AKAP6,LARGE1,FANCM,ARHGEF28,PLCL1,MOK,PXDNL,TBC1D1,IQCJ-SCHIP1,SORCS3,SCN2A,ERP27,RNF152,CNTN1,ZNRF3,GNAQ,AGL,DOCK10,TENM3,ITPKB,GRM5,MED1,EPHA6,SPIRE1,ARAP2,AIMP1,NRG3,CPEB4,PID1,NLGN1,ABL1,PTPRG,NCOR1,JARID2,OR9Q1,GRID2,ELMO1,LRP2,ERBIN,SEMA6D,PPM1L,CABIN1,MBTPS2,FER,PAK5,RYR2,IL17RA,FBXL17,MCC,GLYAT,SUSD4,PRLR,HADHB,NFATC2,DST,GRIK3,STXBP4,MTPN,VSTM2A,GNG7,MTMR2,LRP12,MAPRE2,FGF10,NOS1AP,SOX6,CADM1,SGCD,RC3H2,MSRA,RIC8B,ATF6,EYS,STK32B,VCL,ZNF106,SEZ6L,ZDHHC21,VCAM1,RAPGEF2,RGS12,IFT81,SHANK2,ZMYND11,RAPGEF5,INSR,SRGAP3,PDK1,AKAP13,WDR41,ILDR2,IMMP2L,CHCHD6,KLF15,DENND4C,UNC5D,GABRG2,ARFGEF1,PATJ,ITGA9,ENPP1,ULK2,NRXN3,RIMS2,RHPN2,PPM1F,KCNQ3,ZFHX3,DENND2B,EGLN3,DLGAP2,GFRA1,ATRNL1,GPR156,BMPR1B,NSG1,MAPKBP1,CPE,KCND2,FCRLA,SEMA5A,ATP8A2,KITLG,PYGO1,ARHGAP24,GRIA4,MAP4K4,CERS6,CNIH3,DOCK3,CTNNA2,PRAME,APC,APLF,GPC6,DNER,MARCHF1,ADGRV1,RELN,MACROD2,AKAP11,VPS13C,ANXA4,NAT1,CYBRD1,AUTS2,ROR1,PPP2R3A,MTMR3,BMP2K,SNAI2,CYFIP2,NDFIP1,TNR,PTPN13,DTNA,CELF4,AKT3,CRB1,VAV3,IL1R1,BCAS3,RFTN2,PRKCA,KMT2C,INPP5

			A,USP8,CNTN6,ENPP3,FMN2,ERC1,APP,RPS6 KA3,SMAD5,SLC6A3,PSD3,ALPK2,ASB2,EYA2 ,MAPK8IP1,ADGRB1,CCDC88A,GHRH,ARNT2,R AP1GDS1,AFF3
GO:004239 1	regulation of membrane potential	1.58161731 62350133e- 8	*SLMAP,KCNMA1,SLC8A1,KCNC1,SLC8A3,GRIK 2,IGSF11,GRIK4,TAFA4,GABRG1,PIEZO2,GA BRB1,NALCN,GRIN2B,GRIA1,FGF12,CACNG2, GABRG3,ABCB5,RIMS1,NRXN1,GRID1,CACNA1 C,PRKN,NTRK2,GRIK1,DGKI,AKAP6,GNAQ,GR M5,PID1,NLGN1,ABL1,GRID2,RYR2,GRIK3,C ACNB2,MTMR2,KCNH5,NOS1AP,GABRG2,RIMS2 ,KCNQ3,SCN8A,KCND2,GRIA4,RELN,SLC4A4, CELF4,APP*
GO:000716 6	cell surface receptor signaling pathway	1.65315860 29751337e- 8	*FSTL1,ERBB4,FYB2,MACF1,PAK1,CTNND2,TR IO,MITF,EPN2,EVC,NRP1,NFIA,CDH13,RC3H 1,RPS6KA5,PRKCB,ARHGEF7,GPC5,MAML2,SA MD12,LNPEP,ANKRD6,LDLRAD4,SEMA3A,SLC8 A3,MGAT5,LIMD1,GRIK2,SNX25,IGSF11,MBD 5,KIF16B,NCAM1,ADGRL2,PAPPA,ITGA8,GRI K4,PJA2,TTC21B,DISC1,EYA1,ANKS1B,FYN, CREBBP,SLIT3,GRIN2B,GRIA1,TRABD2B,SPR ED1,SPEN,CRIM1,NOTCH2,MADD,PDE4D,TJP1 ,PTPRT,PRKACB,RIMS1,LAMA1,JCAD,GLI3,N RXN1,NTRK3,FBN1,WWOX,WDPCP,MAGI1,MOSM O,PIAS1,PRICKLE2,HHAT,GRID1,SEL1L,MYO 1E,ZDHHC17,ITGA4,DOCK1,PRKAA2,COL4A2, BBS2,GRB10,PRKN,SIAH2,LATS2,RORA,PTPR D,HDAC4,ADGRB3,NTRK2,PLCB1,MAPK1,LAMB 1,SDCBP,GRIK1,CUL5,DSCAM,BIRC6,DGKI,N LK,EGFR,MAGI2,ARHGEF28,CNTN1,ZNRF3,GN AQ,ITPKB,GRM5,MED1,EPHA6,NRG3,CPEB4,P ID1,NLGN1,ABL1,PTPRG,GRID2,LRP2,ERBIN ,SEMA6D,PPM1L,CABIN1,FER,PAK5,IL17RA, FBXL17,MCC,PRLR,NFATC2,DST,GRIK3,STXB P4,GNG7,MTMR2,FGF10,CADM1,RC3H2,ZNF10 6,RAPGEF2,IFT81,ZMYND11,INSR,KLF15,UN C5D,ITGA9,ENPP1,RIMS2,GFRA1,BMPR1B,CP E,FCRLA,SEMA5A,KITLG,PYGO1,GRIA4,APC, GPC6,DNER,ADGRV1,RELN,ANXA4,ROR1,PPP2 R3A,BMP2K,SNAI2,CYFIP2,CELF4,VAV3,IL1 R1,PRKCA,USP8,CNTN6,APP,SMAD5,ALPK2,E YA2,ADGRB1,CCDC88A,GHRH*
GO:000740 9	axonogenesi s	1.96410936 61867267e- 8	*MACF1,PAK1,TRIO,NRP1,RPS6KA5,CNTN4,AF G3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,NCAM1, DISC1,FYN,B4GALT6,SLIT3,NOTCH2,GLI3,N RXN1,ATL1,ZDHHC17,ITGA4,ARHGAP32,PTPR D,NTRK2,PRKG1,DSCAM,NFIB,DIP2B,ARHGEF 28,CNTN1,EPHA6,ABL1,SEMA6D,NTNG1,VCL, UNC5D,ULK2,NRXN3,BMPR1B,SEMA5A,ATP8A2 ,CTNNA2,RELN,AUTS2,CYFIP2,ADAMTSL1,TN R,CNTN6,APP,ADGRB1*
GO:003033 4	regulation of cell migration	5.37934048 45278074e- 8	*ERBB4,MACF1,PAK1,MITF,SYNE2,NRP1,CDH1 3,ABL2,ARHGEF7,DACH1,FRMD5,LDLRAD4,SE MA3A,MGAT5,STARD13,ADAMTS9,NIPBL,PHAC TR1,AGO2,SRGAP2,ARSB,TAFA5,SPRED1,TPM 1,SRGAP2C,TJP1,PTPRT,LAMA1,JCAD,DOCK4 ,NTRK3,MTUS1,WDPCP,ITGA4,ROCK1,DOCK1, ARHGAP32,PLCB1,MAPK1,LAMB1,SDCBP,PRKG 1,EGFR,BCR,MAGI2,FUT9,DOCK10,LDB2,NRG*

			3,ATP8A1,ABL1,PTPRG,JAM2,SEMA6D,FER,M CC,NTNG1,MAPRE2,FGF10,VCL,RAPGEF2,INS R,SRGAP3,UNC5D,PPM1F,SEMA5A,KITLG,MAP 4K4,CTNNA2,APC,RELN,PPP2R3A,SNAI2,TNR ,AKT3,IL1R1,BCAS3,PRKCA,APP,ADGRB1
GO:001097 5	regulation of neuron projection developmen t	6.51586539 5317228e-8	*MACF1,PAK1,NRP1,ABL2,STAU2,SEMA3A,LRR C4C,SDC2,SLC39A12,DISC1,HECW2,FYN,CSM D3,ARSB,NEGR1,TOX,NRXN1,NTRK3,DNM3,AR HGAP32,PTPRD,ADGRB3,DGKG,NTRK2,DSCAM, DIP2B,PPFIA2,MAGI2,FUT9,CNTN1,TENM3,N LGN1,ABL1,PTPRG,GRID2,SEMA6D,FAT3,NTN G1,RAPGEF2,ULK2,SEMA5A,ATP8A2,MAP4K4, CTNNA2,RELN,ROR1,TNR,PDLIM5,CCDC88A,S POCK1*
GO:000701 0	cytoskeleto n organization	8.59831444 1337469e-8	*MACF1,PAK1,FRMD3,SETD2,KIRREL1,SYNE2, MYO3B,NRP1,EPS8,ARHGEF7,PHACTR3,EML1, STAU2,FRMD5,STARD13,LIMD1,DCLK1,CDC42 BPA,CEP120,CDC42EP3,HMCN1,FGD4,MYO5C, CORO2B,NEBL,FAM171A1,PHACTR1,NEK6,SLC 39A12,ARHGAP28,DISC1,FMN1,SVIL,TTLL7, FRMPD4,SH3KBP1,SRGAP2,MYO5A,TPM1,FLNB ,PCDH15,SRGAP2C,TMOD2,TJP1,ARHGAP26,F CHSD2,GOLGA8S,MAST4,WASF3,HYDIN,WDPCP ,FHOD3,MYO1E,ROCK1,PRKAA2,ARHGEF11,CC SER2,BBS2,PRKN,TRPM7,CDC14B,TLN2,MYO3 A,MAPK1,SDCBP,PRKG1,BCR,LARGE1,RTTN,A RHGEF28,IQCJ- SCHIP1,SPIRE1,PHACTR2,NLGN1,ABL1,NCOR 1,MICAL3,ELMO1,ERBIN,FER,PAK5,DST,MTP N,MAPRE2,FGF10,NOS1AP,PDE4DIP,MPDZ,AK AP13,ARFGEF1,FAT1,PATJ,RHPN2,PPM1F,PG M5,SEMA5A,ATP8A2,CTNNA2,APC,PARD3B,AK AP11,CYFIP2,BCAS3,USH1C,DNAH5,FMN2,PD LIM5,CCDC88A,RAP1GDS1*
GO:009860 9	cell-cell adhesion	9.61471842 082118e-8	*LPP,CTNND2,KIRREL1,AMBRA1,CDH13,RC3H1 ,LRFN5,ABL2,CNTN4,PCDH7,LRRC4C,CADM2, ALCAM,HMCN1,IGSF11,CLSTN2,ITGA8,MYO10 ,FYN,ZBTB16,NEGR1,COL19A1,CLDN10,PCDH 15,NFAT5,MEGF11,TJP1,PTPRT,GLI3,NRXN1 ,ARID1B,MAGI1,CDH20,ITGA4,ROCK1,PTPRD ,TLN2,LAMB1,PRKG1,DSCAM,EGFR,STXBP6,N CAM2,FUT9,CNTN1,TENM3,ITPKB,FNDC3A,CO L14A1,NLGN1,ABL1,JAM2,GRID2,FER,FAT3, NTNG1,CADM1,RC3H2,PCDH9,VCL,ZDHHC21,V CAM1,CDH7,ILDR2,UNC5D,FAT1,ITGA9,NRXN 3,PPM1F,ASTN1,KITLG,CTNNA2,ADGRV1,CYF IP2,NDFIP1,TNR,CRB1,PRKCA,CNTN6,PDLIM 5*
GO:005105 6	regulation of small GTPase mediated signal transduction	9.70146646 5812935e-8	*TRIO,NRP1,EPS8,ABL2,ARHGEF12,STARD13, FGD4,SIPA1L2,ARHGAP28,RALGPS1,ARHGAP4 2,SRGAP2,GARNL3,NOTCH2,MADD,ARHGAP26, ARHGAP31,ARHGEF11,ARHGAP32,MYO9A,DGKI ,BCR,ARHGEF28,ITPKB,ABL1,MAPRE2,FGF10 ,SRGAP3,AKAP13,DENND4C,ARFGEF1,KITLG, ARHGAP24,MAP4K4,DOCK3,RELN,AUTS2,VAV3 ,PSD3*
GO:004858 9	developmen tal growth	9.73220859 5592196e-8	*ERBB4,MACF1,EVC,NRP1,SLC23A2,AFG3L2,S EMA3A,ALCAM,DCLK1,NIPBL,MBD5,SLC39A12 ,DISC1,FMN1,APBA2,SLC1A2,SLIT3,NOTCH2*

			,PCDH15,ESR1,RIMS1,GLI3,CPQ,SLC4A10,ITGA4,SYT1,BBS2,ARHGAP32,PRKN,SCAPER,LATS2,PLCB1,PRKG1,DSCAM,DIP2B,MAGI2,AKAP6,LARGE1,MED1,ABL1,JARID2,SEMA6D,PRLR,MTPN,FGF10,RC3H2,EYS,VCL,INSR,ULK2,RIMS2,BMPR1B,SEMA5A,ATP8A2,BNC2,AUTS2,PPP2R3A,CYFIP2,TNR,APP,PDLIM5,SLC6A3,GHRH
GO:0060078	regulation of postsynaptic membrane potential	1.2091612236826347e-7	*SLC8A3,GRIK2,IGSF11,GRIK4,GABRG1,GABRB1,GRIN2B,GRIA1,GABRG3,RIMS1,NRXN1,GRID1,GRIK1,DGKI,GRM5,NLGN1,GRID2,GRIK3,MTMR2,GABRG2,RIMS2,KCND2,GRIA4,RELN,CELF4,APP*
GO:0022603	regulation of anatomical structure morphogenesis	1.9202647066689713e-7	*MACF1,PAK1,EPN2,NRP1,RC3H1,EPS8,PRKCB,SLC23A2,ARHGEF7,ANKRD6,STAU2,SEMA3A,LRRC4C,LIMD1,ADAMTS9,CDC42EP3,FGD4,SDC2,MYO10,FAM171A1,ATP10A,SLC39A12,DISC1,HECW2,FYN,SH3KBP1,AGO2,TAFA5,SPRED1,TPM1,ESR1,TJP1,RIMS1,PARVB,JCAD,WASF3,WDPCP,PRICKLE2,HMGA2,ROCK1,COL4A2,DNM3,SYT1,ARHGAP32,PRKN,PTPRD,ADGRB3,MYO9A,NTRK2,DSCAM,DIP2B,PPFIA2,BCR,MAGI2,ZNRF3,SPIRE1,PID1,NLGN1,ABL1,SEMA6D,NTNG1,FGF10,RAPGEF2,ULK2,RIMS2,SEMA5A,GPC6,RELN,ROR1,SNAI2,TNR,AKT3,PRKCA,PDLIM5,ADGRB1*
GO:2000145	regulation of cell motility	1.9768548553079083e-7	*ERBB4,MACF1,PAK1,MITF,SYNE2,NRP1,CDH13,ABL2,ARHGEF7,DACH1,FRMD5,LDLRAD4,SEMA3A,MGAT5,STARD13,ADAMTS9,NIPBL,PHACTR1,AGO2,SRGAP2,ARSB,TAFA5,SPRED1,TPM1,SRGAP2C,TJP1,PTPRT,LAMA1,JCAD,DOCK4,NTRK3,MTUS1,WDPCP,PKN2,ITGA4,ROCK1,DOCK1,BBS2,ARHGAP32,PLCB1,MAPK1,LAMB1,SDCBP,PRKG1,EGFR,BCR,MAGI2,FUT9,DOCK10,LDB2,NRG3,ATP8A1,ABL1,PTPRG,JAM2,SEMA6D,FER,MCC,NTNG1,MAPRE2,FGF10,VCL,RAPGEF2,INSR,SRGAP3,UNC5D,PPM1F,SEMA5A,KITLG,MAP4K4,CTNNA2,APC,RELN,PPP2R3A,SNAI2,TNR,AKT3,IL1R1,BCAS3,PRKCA,APP,ADGRB1*
GO:0061564	axon development	2.0578640067015382e-7	*MACF1,PAK1,TRIO,NRP1,RPS6KA5,CNTN4,AFG3L2,SEMA3A,LRRC4C,ALCAM,DCLK1,NCAM1,DISC1,FYN,B4GALT6,SLIT3,NOTCH2,GLI3,NRXN1,TSPAN2,ATL1,ZDHHC17,ITGA4,ARHGAP32,PTPRD,NTRK2,PRKG1,DSCAM,NFIB,DIP2B,NCAM2,ARHGEF28,CNTN1,EPHA6,ABL1,SEMA6D,NTNG1,VCL,UNC5D,ULK2,NRXN3,BMPR1B,SEMA5A,ATP8A2,CTNNA2,RELN,AUTS2,CYFIP2,ADAMTSL1,TNR,CNTN6,APP,ADGRB1*
GO:0040012	regulation of locomotion	2.6141071228351844e-7	*ERBB4,MACF1,PAK1,MITF,SYNE2,NRP1,CDH13,ABL2,ARHGEF7,DACH1,USP14,FRMD5,LDLRAD4,SEMA3A,MGAT5,STARD13,ADAMTS9,NIPBL,PHACTR1,AGO2,SRGAP2,ARSB,TAFA5,SPRED1,TPM1,SRGAP2C,TJP1,PTPRT,LAMA1,JCAD,DOCK4,NTRK3,MTUS1,WDPCP,PKN2,ITGA4,ROCK1,DOCK1,BBS2,ARHGAP32,PLCB1,MAPK1,LAMB1,SDCBP,PRKG1,DSCAM,EGFR,BCR,MAGI2,FUT9,DOCK10,LDB2,NRG3,ATP8A1,ABL1,P*

			TPRG,JAM2,SEMA6D,FER,MCC,NTNG1,MAPRE2 ,FGF10,VCL,RAPGEF2,INSR,SRGAP3,UNC5D, PPM1F,SEMA5A,KITLG,MAP4K4,CTNNA2,APC, RELN,PPP2R3A,SNAI2,TNR,AKT3,IL1R1,BCA S3,PRKCA,APP,ADGRB1
GO:004858 3	regulation of response to stimulus	4.07084657 3113534e-7	*FSTL1,ERBB4,FYB2,MACF1,PAK1,CTNND2,TR IO,SETD2,EPN2,NETO2,EVC,NRP1,CDH13,RC 3H1,EPS8,TAOK3,LRFN5,ABL2,PRKCB,GPC5, ARHGEF12,ANKRD6,HTR2C,USP14,CNKSR3,LD LRAD4,SEMA3A,SLC8A3,MGAT5,STARD13,LIM D1,FGD4,GRIK2,SNX25,IGSF11,MBD5,NCAM1 ,SIPA1L2,CORO2B,ITGA8,PJA2,TAFA4,TTC2 1B,NEK6,ARHGAP28,DISC1,RALGPS1,ARHGAP 42,EYA1,KSR1,EDAR,FRMD6,RGS20,FYN,CRE BBP,DLGAP1,SLIT3,RGS7,GRIN2B,SRGAP2,T RABD2B,TAFA5,SPRED1,CACNG2,GARNL3,CRI M1,NOTCH2,MADD,ESR1,NFAT5,TMOD2,PDE4D ,ARHGAP26,PTPRT,PRKACB,RIMS1,HIPK3,SG MS1,LAMA1,JCAD,GLI3,NRXN1,NTRK3,FBN1, WWOX,ARID1B,MTUS1,MOSMO,CNKSR2,NEK10, HMGA2,PHLPP1,ZDHHC17,GSG1L,ROCK1,ARHG AP31,UBR1,PRKAA2,ARHGEF11,BBS2,GRB10, ARHGAP32,PRKN,DPF3,SIAH2,LATS2,RORA,P TPRD,HDAC4,DGKG,MYO9A,NTRK2,PLCB1,MAP K1,LAMB1,SDCBP,PRKG1,DSCAM,BIRC6,DGKI ,NLK,EGFR,BCR,MAGI2,AKAP6,ARHGEF28,TB C1D1,IQCJ- SCHIP1,RNF152,ZNRF3,GNAQ,ITPKB,GRM5,M ED1,SPIRE1,PID1,NLGN1,ABL1,NCOR1,JARI D2,GRID2,LRP2,ERBIN,SEMA6D,MBTPS2,FER ,PAK5,IL17RA,FBXL17,MCC,SUSD4,PRLR,NF ATC2,MTPN,GNG7,MTMR2,MAPRE2,FGF10,NOS 1AP,CADM1,RC3H2,RIC8B,ATF6,SEZ6L,RAPG EF2,RGS12,IFT81,SHANK2,ZMYND11,INSR,S RGAP3,AKAP13,WDR41,KLF15,DENND4C,ARFG EF1,ENPP1,RIMS2,PPM1F,DENND2B,DLGAP2, BMPR1B,MAPKBP1,SEMA5A,KITLG,ARHGAP24, MAP4K4,CNIH3,DOCK3,CTNNA2,PRAME,APC,A PLF,GPC6,ADGRV1,RELN,VPS13C,AUTS2,ROR 1,PPP2R3A,BMP2K,SNAI2,CYFIP2,NDFIP1,T NR,CELF4,AKT3,VAV3,IL1R1,PRKCA,USP8,C NTN6,ENPP3,FMN2,APP,RPS6KA3,SMAD5,SLC 6A3,PSD3,ALPK2,EYA2,MAPK8IP1,CCDC88A, GHRH,RAP1GDS1*
GO:000761 1	learning or memory	4.94543336 4538413e-7	*SLC8A3,DNAH11,CLSTN2,TANC1,ITGA8,PJA2 ,FYN,GRIN2B,GRIA1,BTBD9,TMOD2,BRINP1, NRXN1,PIAS1,PRKN,ADGRB3,NTRK2,PLCB1,M APK1,DGKI,EGFR,LARGE1,SORCS3,SCN2A,GR M5,ATP8A1,ABL1,PAK5,SHANK2,INSR,SYNJ1 ,ATXN1,NRXN3,RELN,TNR,APP*
GO:005080 7	regulation of synapse organization	9.65163951 809437e-7	*RPS6KA5,LRFN5,STAU2,CLSTN2,ADGRL2,TAN C1,DISC1,ASAP1,FRMPD4,FYN,GRIN2B,NEGR 1,DGKB,PTPRT,NRXN1,CTTNBP2,GRID1,ROCK 1,DNM3,PTPRD,ADGRB3,NTRK2,PPFIA2,NLGN 1,ABL1,GRID2,SHANK2,CTNNA2,RELN,PTPN1 3,APP,PDLIM5,ADGRB1*
GO:000721 5	glutamate receptor	9.78882114 8680427e-7	*GRIK2,GRIK4,FYN,GRIN2B,GRIA1,GRID1,PL CB1,GRIK1,GNAQ,GRM5,CPEB4,GRID2,GRIK3 ,GRIA4,APP*

	signaling pathway		
GO:0035235	ionotropic glutamate receptor signaling pathway	0.00000011180169871441538	*GRIK2,GRIK4,GRIN2B,GRIA1,GRID1,GRIK1,CPEB4,GRID2,GRIK3,GRIA4,APP*
GO:0016192	vesicle-mediated transport	0.000001172565614597 0602	*CUBN,MACF1,PAK1,ATP9B,EPN2,DOP1B,NRP1,CDH13,ABL2,PRKCB,LYPLA1,DYSF,TBC1D5,EXOC6B,PIK3C3,DCLK1,ADAMTS9,KIF16B,EVI5,VPS41,TAFA4,COG2,CLTCL1,SV2B,LYST,PLEKHA3,FYN,SH3KBP1,CADPS,LRP1B,GRIA1,AP5M1,MYO5A,CACNG2,BTBD9,MEGF11,ERC2,RIMS1,FCHSD2,NRXN1,TRAPPC10,RAPGEF4,EHBP1,SYN2,MYO1E,ITGA4,GSG1L,ROCK1,DOCK1,AMPH,SORCS1,DNM3,SYT1,BBS2,PRKN,EXOC4,SCFD2,MAPK1,SDCBP,ATP9A,EGFR,PPFIA2,STXBP6,CLCN5,BCR,MAGI2,TRAPPC8,STX12,TMPRSS3,ANKFY1,SPIRE1,SNX30,NLGN1,ABL1,MICAL3,ELMO1,LRP2,FER,MON2,SCAMP1,LDLRAD3,MTMR2,LRP12,KIF13A,XKR6,INSR,WDR41,SYNJ1,ARFGEF1,ENPP1,UNC13C,RIMS2,SNX8,NSG1,SV2C,CNIH3,DNER,VPS13C,STON1-GTF2A1L,BMP2K,SNAP91,VAV3,FCHO2,FMN2,ERC1,APP,DNAJC13,VPS13B,ABCA13,MAPK8IP1,ADGRB1*
GO:0060560	developmental growth involved in morphogenesis	0.000001652525614193 0695	*MACF1,NRP1,SLC23A2,SEMA3A,ALCAM,DCLK1,SLC39A12,DISC1,FMN1,SLIT3,ESR1,RIMS1,ITGA4,SYT1,ARHGAP32,PRKN,PRKG1,DSCAM,DIP2B,MAGI2,MED1,ABL1,SEMA6D,FGF10,VCL,ULK2,RIMS2,SEMA5A,AUTS2,PPP2R3A,CYFIP2,TNR,APP*
GO:0048522	positive regulation of cellular process	0.000001853589637765895	*HPSE2,SAMD4A,ERBB4,KCNMA1,APBB2,MACF1,PAK1,SCAF8,MITF,SETD2,KIRREL1,AMBRA1,SYNE2,EPN2,ZNF208,MYO3B,EVC,NRP1,TEAD1,NFIA,CDH13,RC3H1,RPS6KA5,EPS8,TAOK3,ABL2,PRKCB,SLC23A2,ARHGEF7,UTRN,GPC5,MAML2,PRR16,CDK12,ANKRD6,HTR2C,KCNC1,STAU2,NEK4,FYCO1,LPGAT1,CTIF,TBC1D5,CNKSR3,FRMD5,SEMA3A,SLC8A3,RFX3,MGAT5,SLC40A1,SLCO3A1,ATP11C,ADAMTS9,NIPBL,CEP120,CDC42EP3,CHD6,GRIK2,IGSF11,MBD5,CLSTN2,TCF12,ADGRL2,CORO2B,ITGA8,ZBTB20,MYO10,PJA2,TCF4,IREB2,PBX1,ATP10A,BICRAL,TTC21B,NEK6,ABCD2,MOB1B,DISC1,CLTCL1,RIC3,FMN1,EYA1,KSR1,RORB,SVIL,ASAP1,FRMPD4,EDAR,ST8SIA1,FRMD6,FYN,SH3KBP1,AGO2,NALCN,CREBBP,SLC1A2,ZBTB16,CADPS,RGS7,GRIN2B,ARSB,GRIA1,TRABD2B,NEGR1,SPRED1,SPEN,CACNG2,KANSL1,TPM1,NOTCH2,MADD,TOX,ESR1,NFAT5,SRGAP2C,TMOD2,PDE4D,TJP1,ERC2,RIMS1,FCHSD2,LAMA1,JCAD,GLI3,DOCK4,BRINP1,NRXN1,FRMD4A,SUPT16H,NTRK3,WWOX,WASF3,ARID1B,MAGI1,PRRC1,RAPGEF4,NEK10,ANKRD31,PIAS1,ZNF521,PBX3,HMGA2,ZNF287,CREB5,T*

			NRC6B,RERE,ZDHHC17,PKN2,ITGA4,ROCK1,D OCK1,GLIS1,RXRG,PRKAA2,ARHGEF11,DNM3, SYT1,GRB10,ARHGAP32,ASXL3,PRKN,DPF3,E DIL3,LATS2,RORA,PTPRD,CDC14B,RANBP3L, HDAC4,ADGRB3,ZNF717,MYO3A,NTRK2,PLCB1 ,MAPK1,LAMB1,SDCBP,BPTF,SOX5,PRKG1,DS CAM,BIRC6,DGKI,NFIB,TUT4,EGFR,MGA,BCR ,MAGI2,NELL1,AKAP6,LARGE1,MELTF,FUT9, ANKFY1,IQCJ- SCHIP1,RNF152,CNTN1,TENM3,ITPKB,GRM5, MED1,GLIS3,SPIRE1,AIMP1,LDB2,SNX30,AT P8A1,PID1,NLGN1,ABL1,PRDM10,EBF2,JAM2 ,GRID2,LRP2,SEMA6D,MBTPS2,FER,SETDB2, RYR2,ELF2,IL17RA,PRLR,NFATC2,CACNB2,S TXBP4,MED15,MTPN,VSTM2A,MTMR2,MAPRE2, FGF10,NOS1AP,SOX6,CADM1,RC3H2,PDE4DIP ,ATF6,SP3,VCAM1,RAPGEF2,SHANK2,INSR,A KAP13,SYNJ1,KLF15,KDM1B,ULK2,ZNF462,R IMS2,PPM1F,ZFHX3,DENND2B,GFRA1,BMPR1B ,NSG1,MAPKBP1,SEMA5A,ATP8A2,SLC24A3,K ITLG,PYGO1,MAP4K4,DOCK3,PRAME,APC,APL F,ADGRV1,RELN,AUTS2,ROR1,PPP2R3A,BMP2 K,SNAI2,CYFIP2,SLC4A4,NDFIP1,TNR,CELF 4,AKT3,VAV3,IL1R1,BCAS3,NPAS3,PRKCA,K MT2C,USP8,MRTFB,CNTN6,FMN2,APP,RPS6KA 3,SMAD5,ABCA13,EYA2,MAPK8IP1,ADGRB1,C CDC88A,GHRH,ARNT2
GO:005508 5	transmembr ane transport	0.00000188 9852922793 917	*SLMAP,KCNMA1,SLC17A1,SLC6A11,SLC15A5, PRKCB,SLC23A2,UTRN,SLC8A1,SLC2A13,HTR 2C,KCNC1,CACNA1E,TMEM63C,AFG3L2,CNKSR 3,SLC8A3,SLC40A1,SLCO3A1,ATP11C,SLC9C 1,GRIK2,SLC25A21,GRIK4,GABRG1,ATP10A, ABCD2,SLC39A12,CLTCL1,SV2B,HECW2,PIEZ O2,SLC35F1,GABRB1,TMEM241,SLC16A9,ATP 2B2,FYN,NALCN,SLC1A2,RGS7,GRIN2B,GRIA 1,FGF12,CACNG2,GABRG3,ABCB5,SLC44A5,P DE4D,ITPR2,NRXN1,LONP2,DPP6,GRID1,CAC NA2D3,SLC4A10,SLC7A2,ABCC9,GSG1L,CACN A1C,GRB10,TRPM7,PLCB1,GRIK1,CUL5,PRKG 1,CLCN5,BCR,AKAP6,LARGE1,MELTF,SLC37A 2,SLC12A1,SCN2A,GRM5,ATP8A1,PID1,NLGN 1,ABL1,GRID2,LRP2,RYR2,GRIK3,CACNB2,S TXBP4,KCNH5,LRRC8B,NOS1AP,TRPM3,INSR, UNC80,KLF15,GABRG2,ENPP1,KCNQ3,SCN8A, KCND2,SLC24A3,SV2C,GRIA4,CNIH3,ABCA5, RELN,KCNJ15,CYBRD1,SLC4A4,OCA2,KCNS3, APP,SLC6A3,ABCA13*
GO:005089 0	cognition	0.00000203 9830703173 9632	*DOP1B,SLC8A3,DNAH11,NIPBL,CLSTN2,TANC 1,ITGA8,PJA2,FYN,GRIN2B,GRIA1,BTBD9,T MOD2,BRINP1,NRXN1,PIAS1,PRKN,ADGRB3,N TRK2,PLCB1,MAPK1,DGKI,EGFR,LARGE1,SOR CS3,SCN2A,GRM5,ATP8A1,ABL1,PAK5,SHANK 2,INSR,SYNJ1,ATXN1,NRXN3,RELN,TNR,APP*
GO:005080 3	regulation of synapse structure or activity	0.00000204 0147296983 2026	*RPS6KA5,LRFN5,STAU2,CLSTN2,ADGRL2,TAN C1,DISC1,ASAP1,FRMPD4,FYN,GRIN2B,NEGR 1,DGKB,PTPRT,NRXN1,CTTNBP2,GRID1,ROCK 1,DNM3,PTPRD,ADGRB3,NTRK2,PPFIA2,NLGN 1,ABL1,GRID2,SHANK2,CTNNA2,RELN,PTPN1 3,APP,PDLIM5,ADGRB1*

GO:0040007	growth	0.000002062416960742616	*ERBB4,MACF1,EVC,NRP1,TEAD1,PRKCB,SLC23A2,RERG,AFG3L2,SEMA3A,ALCAM,DCLK1,NIPBL,MBD5,SLC39A12,DISC1,FMN1,APBA2,SLC1A2,SLIT3,NOTCH2,PCDH15,ESR1,RIMS1,GLI3,CPQ,SLC4A10,ITGA4,ARHGEF11,SYT1,BBS2,ARHGAP32,PRKN,SCAPER,LATS2,PLCB1,SDCBP,PRKG1,DSCAM,DIP2B,EGFR,MAGI2,AKAP6,LARGE1,MED1,NRG3,ABL1,JARID2,SEMA6D,PAK5,PRLR,MTPN,LRP12,FGF10,RC3H2,EYS,VCL,INSR,ENPP1,ULK2,RIMS2,PPM1F,BMPR1B,SEMA5A,ATP8A2,BNC2,AUTS2,PPP2R3A,CYFIP2,TNR,APP,PDLIM5,RPS6KA3,SLC6A3,GHRH,SPOCK1*
GO:0051641	cellular localization	0.000002413918168703 5393	*SLMAP,ERBB4,FYB2,CUBN,MACF1,PAK1,SLC6A11,SETD2,SLC15A5,SYNE2,NETO2,DOP1B,NRP1,CDH13,TANGO2,HERC2,PRKCB,GPC5,SLC8A1,LYPLA1,HTR2C,DYSF,STAU2,SIAH3,FYCO1,TBC1D5,EXOC6B,RFX3,SLC40A1,PIK3C3,DCLK1,DNAH11,ADAMTS9,NIPBL,CEP120,GRIK2,SNX25,IGSF11,CCDC186,MYO5C,KIF16B,ODR4,CORO2B,EVI5,ITGA8,SYCP1,VPS41,MYO10,ASB3,TOM1L2,IREB2,TTC21B,ABCD2,COG2,DISC1,CLTCL1,SV2B,RIC3,GPR158,APBA2,LYST,PLEKHA3,FRMD6,FYN,CREBBP,SLC1A2,ZBTB16,CADPS,LRBA,SGTB,LRP1B,ARSB,AP5M1,MYO5A,CACNG2,TSPAN33,BTBD9,NPIPA1,ESR1,PDE4D,TJP1,ERC2,RIMS1,FCHSD2,GLI3,ITPR2,NRXN1,FRMD4A,FBN1,LONP2,TRAPPC10,WDPCP,RAPGEF4,EHBP1,DPP6,SEL1L,SYN2,MYO1E,ZDHHC17,ITGA4,GSG1L,ROCK1,CACNA1C,PRKAA2,AMPH,RGPD4,DNM3,PACRG,SYT1,BBS2,PRKN,LATS2,EXOC4,DLG2,SCFD2,BBS9,PTPRN2,RANBP3L,PLCB1,MAPK1,SDCBP,ATP9A,DGKI,NBEA,EGFR,PPFIA2,BCR,MAGI2,AKAP6,LARGE1,TRAPPC8,STX12,ANKFY1,TBC1D1,MED1,GNPTAB,SPIRE1,WDR72,SNX30,PID1,NLGN1,ABL1,JARID2,GRID2,LRP2,RANBP17,ERBIN,FER,MON2,RYR2,SCAMP1,MCC,DST,CACNB2,STXBP4,MTMR2,MAPRE2,FGF10,KIF13A,IPO11,VCL,ZDHHC21,RAPGEF2,IFT81,ILDR2,IMMP2L,SYNJ1,DENND4C,ATXN1,ARFGEF1,UNC13C,TANGO6,NRXN3,RIMS2,PPM1F,KCNQ3,SNX8,NSG1,CPE,PYGO1,SV2C,MAP4K4,EFR3A,APC,APLF,GPC6,PARD3B,ADGRV1,RELN,AKAP11,VPS13C,CYBRD1,NDFIP1,SNAP91,CRB1,FCHO2,HEPACAM,USP8,USH1C,DNAH5,FMN2,ERC1,APP,SLC6A3,DNAJC13,VPS13B,ABCA13,EYA2,CCDC88A,RAP1GDS1*
GO:0098657	import into cell	0.000003173853319945 5505	*CUBN,PAK1,SLC6A11,ATP9B,EPN2,CDH13,ABL2,SLC8A1,DYSF,CACNA1E,TBC1D5,SLC8A3,PIK3C3,SLC9C1,TAFA4,SLC39A12,CLTCL1,LYST,FYN,SH3KBP1,SLC1A2,LRP1B,GRIA1,CACNG2,BTBD9,MEGF11,FCHSD2,EHBP1,MYO1E,SLC7A2,ITGA4,ABCC9,GSG1L,ROCK1,DOCK1,CACNA1C,AMPH,DNM3,SYT1,PRKN,MAPK1,SDCBP,ATP9A,EGFR,CLCN5,BCR,MAGI2,TMPRSS3,ANKFY1,SLC12A1,SCN2A,NLGN1,ABL1,ELMO1,LRP2,SCAMP1,LDLRAD3,MTMR2,LRP12,XKR6,INSR,SYNJ1,ENPP1,SCN8A,DNER,KCNJ15,*

			STON1-GTF2A1L,BMP2K,SNAP91,VAV3,FCHO2,APP,SLC6A3,DNAJC13,ABCA13,ADGRB1
GO:0048518	positive regulation of biological process	0.00000453 7059043646 632	*HPSE2,SAMD4A,ERBB4,KCNMA1,APBB2,FYB2, MACF1,PAK1,SCAF8,MITF,SETD2,KIRREL1,A MBRA1,SYNE2,EPN2,ZNF208,MYO3B,EVC,NRP 1,TEAD1,NFIA,CDH13,RC3H1,RPS6KA5,LHFP L2,EPS8,TAOK3,ABL2,PRKCB,SLC23A2,ARHG EF7,UTRN,GPC5,MAML2,SLC8A1,PRR16,CDK1 2,SLC2A13,ANKRD6,HTR2C,KCNC1,STAU2,NE K4,FYCO1,LPGAT1,CTIF,TBC1D5,CNKSR3,FR MD5,SEMA3A,PLIN2,SLC8A3,RFX3,MGAT5,SL C40A1,SLCO3A1,ATP11C,LIMD1,ADAMTS9,NI PBL,CEP120,CDC42EP3,CHD6,GRIK2,IGSF11 ,GSAP,MBD5,CLSTN2,TCF12,ADGRL2,CORO2B ,ITGA8,ZBTB20,MYO10,PJA2,TCF4,IREB2,P BX1,ATP10A,BICRAL,TTC21B,NEK6,ABCD2,S LC39A12,MOB1B,DISC1,CLTCL1,RIC3,FMN1, EYA1,KSR1,RORB,SVIL,ASAP1,FRMPD4,EDAR ,ST8SIA1,FRMD6,FYN,SH3KBP1,AGO2,NALCN ,CREBBP,SLC1A2,ZBTB16,CADPS,RGS7,GRIN 2B,ANTXR1,ARSB,GRIA1,TRABD2B,NEGR1,SP RED1,SPEN,FGF12,CACNG2,KANSL1,TPM1,NO TCH2,MADD,TOX,ESR1,NFAT5,SRGAP2C,TMOD 2,PDE4D,TJP1,ERC2,RIMS1,FCHSD2,LAMA1, JCAD,GLI3,DOCK4,BRINP1,NRXN1,FRMD4A,S UPT16H,NTRK3,BCL2L13,WWOX,WASF3,ARID1 B,MAGI1,PRRC1,RAPGEF4,NEK10,ANKRD31,P IAS1,ZNF521,PBX3,HMGA2,ZNF287,CREB5,T NRC6B,RERE,ZDHHC17,PKN2,ITGA4,ROCK1,D OCK1,GLIS1,RXRG,PRKAA2,ARHGEF11,DNM3, SYT1,BBS2,GRB10,ARHGAP32,ASXL3,PRKN,D PF3,EDIL3,LATS2,RORA,PTPRD,CDC14B,RAN BP3L,HDAC4,ADGRB3,ZNF717,MYO3A,NTRK2, PLCB1,MAPK1,LAMB1,SDCBP,BPTF,SOX5,PRK G1,DSCAM,BIRC6,DGKI,NFIB,DIP2B,TUT4,E GFR,MGA,BCR,MAGI2,NELL1,AKAP6,LARGE1, FANCM,MELTF,FUT9,ANKFY1,IQCJ-SCHIP1,RNF152,CNTN1,TENM3,ITPKB,GRM5, MED1,GLIS3,SPIRE1,AIMP1,LDB2,SNX30,AT P8A1,PID1,NLGN1,ABL1,PRDM10,EBF2,JAM2 ,GRID2,LRP2,ERBIN,SEMA6D,MBTPS2,FER,S ETDB2,RYR2,ELF2,IL17RA,SUSD4,PRLR,NFA TC2,CACNB2,STXBP4,MED15,MTPN,VSTM2A,M TMR2,MAPRE2,FGF10,NOS1AP,SOX6,CADM1,R C3H2,PDE4DIP,ATF6,SP3,VCAM1,RAPGEF2,S HANK2,INSR,AKAP13,SYNJ1,KLF15,KDM1B,A RFGEF1,ULK2,ZNF462,RIMS2,PPM1F,ZFHX3, DENND2B,EGLN3,GFRA1,BMPR1B,NSG1,MAPKB P1,SEMA5A,ATP8A2,SLC24A3,KITLG,PYGO1, MAP4K4,DOCK3,PRAME,APC,APLF,ABCA5,ADG RV1,RELN,AUTS2,ROR1,PPP2R3A,BMP2K,SNA I2,CYFIP2,SLC4A4,NDFIP1,TNR,CELF4,AKT 3,VAV3,IL1R1,BCAS3,NPAS3,PRKCA,KMT2C, USP8,MRTFB,CNTN6,ENPP3,FMN2,APP,RPS6K A3,SMAD5,SLC6A3,ABCA13,EYA2,MAPK8IP1, ADGRB1,CCDC88A,GHRH,ARNT2*
GO:1990806	ligand-gated ion channel	0.00000457 5341013824	*GRIK2,GRIK4,GRIN2B,GRIA1,GRID1,PLCB1, GRIK1,CPEB4,GRID2,GRIK3,GRIA4,APP*

	signaling pathway	816	
GO:004001 1	locomotion	0.00000535 6189474489 572	ERBB4,MACF1,PAK1,MITF,SYNE2,NRP1,CDH1 3,ABL2,ARHGEF7,DACH1,USP14,FRMD5,LDLR AD4,SEMA3A,MGAT5,STARD13,ADAMTS9,NIPB L,TAFA4,PHACTR1,LYST,AGO2,SLIT3,SRGAP 2,ARSB,TAFA5,SPRED1,TPM1,SRGAP2C,TJP1 ,PTPRT,LAMA1,JCAD,DOCK4,NTRK3,MTUS1,W DPCP,PKN2,ITGA4,ROCK1,DOCK1,BBS2,ARHG AP32,PLCB1,MAPK1,LAMB1,SDCBP,PRKG1,DS CAM,EGFR,BCR,MAGI2,FUT9,DOCK10,LDB2,N RG3,ATP8A1,ABL1,PTPRG,JAM2,SEMA6D,FER ,IL17RA,MCC,NTNG1,MAPRE2,FGF10,VCL,VC AM1,RAPGEF2,INSR,SRGAP3,UNC5D,ITGA9,P PM1F,SEMA5A,KITLG,MAP4K4,CTNNA2,APC,R ELN,PPP2R3A,SNAI2,TNR,AKT3,VAV3,IL1R1 ,BCAS3,PRKCA,APP,ADGRB1
GO:001635 8	dendrite developmen t	0.00000822 3173115998 26	CTNND2,NRP1,STAU2,SEMA3A,DCLK1,SDC2,P HACTR1,DISC1,HECW2,ASAP1,FYN,CSMD3,SR GAP2,SRGAP2C,RERE,DNM3,PTPRD,ADGRB3,D GKG,PRKG1,DSCAM,PPFIA2,DOCK10,NLGN1,A BL1,FAT3,RAPGEF2,CTNNA2,RELN,APP,PDLI M5
GO:004816 7	regulation of synaptic plasticity	0.00001151 2783591507 674	STAU2,CNTN4,SLC8A3,GRIK2,IGSF11,GRIN2 B,GRIA1,ERC2,RIMS1,SLC4A10,NTRK2,MAPK 1,DGKI,LARGE1,SORCS3,GRM5,ABL1,GRID2, RAPGEF2,SHANK2,UNC13C,RIMS2,KCNQ3,NSG 1,RELN,TNR,ERC1,APP,ADGRB1
GO:000741 6	synapse assembly	0.00001264 1586574001 866	ERBB4,LRFN5,STAU2,CLSTN2,ADGRL2,SRGAP 2,GRIA1,NEGR1,SRGAP2C,NRXN1,DNM3,PTPR D,ADGRB3,NTRK2,SDCBP,DSCAM,LARGE1,NRG 3,NLGN1,GRID2,SHANK2,GABRG2,NRXN3,DNE R,PTPN13,APP,PDLIM5,ADGRB1
GO:000761 2	learning	0.00001466 2482629540 292	SLC8A3,CLSTN2,TANC1,FYN,NRXN1,PIAS1,P RKN,ADGRB3,NTRK2,PLCB1,DGKI,SORCS3,GR M5,ATP8A1,ABL1,PAK5,SHANK2,INSR,SYNJ1 ,ATXN1,NRXN3,RELN,TNR,APP
GO:003090 0	forebrain developmen t	0.00001479 2979918592 2	ERBB4,SETD2,SYNE2,NRP1,KCNC1,SEMA3A,D CLK1,CEP120,PHACTR1,TTC21B,DISC1,FYN, SLC1A2,SRGAP2,GRIA1,TOX,SRGAP2C,ZSWIM 6,GLI3,SLC4A10,HERC1,BBS2,FOXP2,NTRK2 ,PLCB1,LAMB1,PRKG1,NFIB,EGFR,LARGE1,S CN2A,NRG3,LRP2,FGF10,PCDH9,RAPGEF2,SE MA5A,RELN,TNR,DNAH5,APP,SLC6A3,GHRH
GO:005123 9	regulation of multicellula r organismal process	0.00001631 7643939451 274	ERBB4,MACF1,MITF,SETD2,AMBRA1,EPN2,NE TO2,NRP1,RC3H1,RPS6KA5,LRFN5,ABL2,PRK CB,SLC8A1,LNPEP,HTR2C,STAU2,AFG3L2,LD LRAD4,SEMA3A,SLC8A3,RFX3,STARD13,ATP1 1C,ADAMTS9,NIPBL,GRIK2,IGSF11,MBD5,CL STN2,ADGRL2,CORO2B,ZBTB20,PJA2,ASB3,T AFA4,PBX1,BICRAL,TTC21B,ABCD2,SLC39A1 2,DISC1,ARHGAP42,ATP2B2,FYN,SH3KBP1,A GO2,ZBTB16,DLGAP1,GRIN2B,ARSB,TAFA5,S PRED1,SPEN,FGF12,TPM1,NOTCH2,TOX,ESR1 ,PDE4D,TJP1,RIMS1,LAMA1,JCAD,GLI3,DOC K4,BRINP1,NRXN1,FBN1,WASF3,ARID1B,WDP CP,PBX3,HMGA2,ZNF287,ABCC9,ROCK1,DOCK 1,CACNA1C,COL4A2,BBS2,GRB10,ARHGAP32,

			LATS2,PPP1R12B,RORA,PTPRD,TG,HDAC4,AD GRB3,NTRK2,PLCB1,MAPK1,SDCBP,SOX5,PRK G1,DSCAM,NFIB,DIP2B,EGFR,BCR,NELL1,AK AP6,PLCL1,GNAQ,ITPKB,GRM5,MED1,NLGN1, ABL1,PTPRG,JARID2,EBF2,JAM2,GRID2,LRP 2,ERBIN,SEMA6D,FER,RYR2,IL17RA,MCC,PR LR,NFATC2,CACNB2,MTPN,MTMR2,MAPRE2,FG F10,NOS1AP,SOX6,CADM1,RC3H2,VCL,ZDHHC 21,VCAM1,RAPGEF2,INSR,ILDR2,ENPP1,ULK 2,RIMS2,PPM1F,ZFHX3,DLGAP2,BMPR1B,MAP KBP1,SEMA5A,ATP8A2,KITLG,MAP4K4,APC,A PLF,ADGRV1,RELN,ANXA4,BMP2K,SNAI2,NDF IP1,TNR,PTPN13,CELF4,AKT3,VAV3,IL1R1, BCAS3,PRKCA,MRTFB,ENPP3,APP,SLC6A3,AL PK2,MAPK8IP1,ADGRB1,GHRH
GO:0009888	tissue developmen t	0.00001719 9445503005 738	*FSTL1,ERBB4,PAK1,SETD2,AMBRA1,ALPK3,E VC,NRP1,NFIA,SLC8A1,ANKRD6,LDLRAD4,SE MA3A,RFX3,RBFOX1,STARD13,SLC40A1,ADAM TS9,KIF16B,NEBL,ITGA8,PBX1,SLC39A12,F MN1,EYA1,SVIL,EDAR,FRMD6,ZBTB16,SPRED 1,TPM1,COL19A1,NOTCH2,FLNB,TOX,PCDH15 ,ESR1,PDE4D,TJP1,PRKACB,LAMA1,GLI3,SG CG,HYDIN,WDPCP,PRICKLE2,HMGA2,FHOD3,G REB1L,MYO1E,ITGA4,ROCK1,COL4A2,BBS2,L ATS2,EXOC4,RANBP3L,HDAC4,MYO9A,PLCB1, MAPK1,LAMB1,SDCBP,BPTF,SOX5,PRKG1,BIR C6,NFIB,EGFR,PTPRQ,BCR,MAGI2,NELL1,AK AP6,LARGE1,ZNRF3,MED1,FNDC3A,LDB2,WDR 72,ABL1,JARID2,EBF2,LRP2,SEMA6D,FER,S ETDB2,RYR2,FBXL17,PRLR,NFATC2,MTPN,FG F10,SOX6,SGCD,VCL,ZDHHC21,RAPGEF2,INS R,AKAP13,KLF15,FAT1,ENPP1,PGM5,BMPR1B ,SEMA5A,SLC24A3,KITLG,ARHGAP24,APC,AP LF,GPC6,DNER,ADGRV1,BNC2,ANXA4,ROR1,P PP2R3A,BMP2K,SNAI2,KAZN,USH1C,MRTFB,P DLIM5,SMAD5,VPS13B,ALPK2,ASB2,EYA2*
GO:0035249	synaptic transmissio n, glutamaterg ic	0.00001724 8535780097 515	*GRIK2,GRIK4,DISC1,GRIN2B,GRIA1,CACNG2 ,NRXN1,GRID1,SYT1,PRKN,GRIK1,DGKI,GRM 5,NLGN1,GRID2,GRIK3,UNC13C,GRIA4,RELN ,TNR*
GO:1901888	regulation of cell junction assembly	0.00003373 8231748349 73	*MACF1,NRP1,LRFN5,STAU2,CLSTN2,ADGRL2, FMN1,PEAK1,NEGR1,TJP1,NRXN1,WDPCP,ROC K1,PTPRD,ADGRB3,NTRK2,NLGN1,ABL1,GRID 2,VCL,RAPGEF2,PPM1F,MAP4K4,SNAI2,PTPN 13,APP,PDLIM5,ADGRB1*
GO:0006897	endocytosis	0.00003589 6040457260 226	*CUBN,PAK1,ATP9B,EPN2,CDH13,ABL2,DYSF, TBC1D5,PIK3C3,TAFA4,CLTCL1,LYST,FYN,S H3KBP1,LRP1B,GRIA1,CACNG2,BTBD9,MEGF1 1,FCHSD2,EHBP1,MYO1E,ITGA4,GSG1L,ROCK 1,DOCK1,AMPH,DNM3,SYT1,PRKN,MAPK1,SDC BP,ATP9A,EGFR,CLCN5,BCR,MAGI2,TMPRSS3 ,ANKFY1,NLGN1,ABL1,ELMO1,LRP2,SCAMP1, LDLRAD3,MTMR2,LRP12,XKR6,INSR,SYNJ1,E NPP1,DNER,STON1- GTF2A1L,BMP2K,SNAP91,VAV3,FCHO2,APP,D NAJC13,ABCA13,ADGRB1*
GO:0009917	postsynapse	0.00003761	*CTNND2,NRP1,RPS6KA5,STAU2,TANC1,DISC1*

3	organization	8787641199 46	*,ASAP1,FRMPD4,FYN,GRIN2B,DGKB,NRXN1,C NKSR2,GRID1,DNM3,PTPRD,PPFIA2,DOCK10, NLGN1,GRID2,MTMR2,NOS1AP,SHANK2,INSR, NRXN3,RELN,PDLIM5*
GO:004888 0	sensory system developmen t	0.00003828 5591474517 98	*PDE6A,MITF,NRP1,NFIA,STAU2,SEMA3A,DCL K1,NIPBL,PBX1,RORB,ATP2B2,SPRED1,NOTC H2,ABCB5,MEGF11,LAMA1,GLI3,FBN1,WDPCP ,PBX3,CACNA1C,SCAPER,NTRK2,DSCAM,NFIB ,EGFR,LARGE1,TENM3,MED1,SMOC1,FAT3,FG F10,ATF6,SP3,FAT1,BMPR1B,ATP8A2,PPP2R 3A,CELF4,CRB1,USH1C,SLC6A3*
GO:000988 7	animal organ morphogene sis	0.00003872 7397428315 93	*ERBB4,SETD2,MYO3B,NRP1,PRKCB,ANKRD6,S TAU2,MMP16,SLC40A1,DNAH11,NIPBL,ITGA8 ,PBX1,FMN1,EYA1,RORB,EDAR,SLIT3,TPM1, NOTCH2,PCDH15,ESR1,MEGF11,LRIG1,LAMA1 ,GLI3,FBN1,WWOX,WDPCP,PBX3,PRICKLE2,G REB1L,SLC4A10,BBS2,ASXL3,EXOC4,MYO3A, FOXN3,NTRK2,MAPK1,LAMB1,SOX5,DSCAM,NF IB,EGFR,PTPRQ,BCR,MAGI2,LARGE1,ZNRF3, TENM3,MED1,WDR72,NRG3,ABL1,LRP2,SETDB 2,RYR2,FAT3,FGF10,SOX6,SP3,INSR,FAT1, BMPR1B,CPE,ATP8A2,FREM1,CTNNA2,APC,GP C6,ROR1,PPP2R3A,SNAI2,AKT3,CRB1,USH1C ,ALPK2,ASB2*
GO:000165 4	eye developmen t	0.00005613 1651542705	*PDE6A,MITF,NRP1,NFIA,STAU2,DCLK1,NIPB L,PBX1,RORB,ATP2B2,SPRED1,NOTCH2,ABCB 5,MEGF11,LAMA1,GLI3,FBN1,WDPCP,PBX3,C ACNA1C,SCAPER,NTRK2,DSCAM,NFIB,EGFR,L ARGE1,TENM3,MED1,SMOC1,FAT3,FGF10,ATF 6,SP3,FAT1,BMPR1B,ATP8A2,PPP2R3A,CELF 4,CRB1,USH1C,SLC6A3*
GO:000176 4	neuron migration	0.00007030 4050578147 7	*NRP1,SEMA3A,DCLK1,NIPBL,PHACTR1,DISC1 ,FYN,SRGAP2,SRGAP2C,ARHGAP32,NTRK2,PR KG1,LARGE1,NRG3,FAT3,NTNG1,LRP12,RAPG EF2,UNC5D,ASTN1,CTNNA2,DNER,RELN,AUTS 2,SPOCK1*
GO:015006 3	visual system developmen t	0.00007410 5437236206 89	*PDE6A,MITF,NRP1,NFIA,STAU2,DCLK1,NIPB L,PBX1,RORB,ATP2B2,SPRED1,NOTCH2,ABCB 5,MEGF11,LAMA1,GLI3,FBN1,WDPCP,PBX3,C ACNA1C,SCAPER,NTRK2,DSCAM,NFIB,EGFR,L ARGE1,TENM3,MED1,SMOC1,FAT3,FGF10,ATF 6,SP3,FAT1,BMPR1B,ATP8A2,PPP2R3A,CELF 4,CRB1,USH1C,SLC6A3*
GO:004858 8	developmen tal cell growth	0.00008048 6463313858 24	*MACF1,NRP1,SLC23A2,SEMA3A,ALCAM,DCLK1 ,SLC39A12,DISC1,SLIT3,RIMS1,ITGA4,SYT 1,ARHGAP32,PRKN,PRKG1,DSCAM,DIP2B,AKA P6,ABL1,SEMA6D,VCL,ULK2,RIMS2,SEMA5A, AUTS2,CYFIP2,TNR,APP,PDLIM5*
GO:005087 7	nervous system process	0.00009169 6180960817 45	*PDE6A,NETO2,DOP1B,MYO3B,OR4C46,HTR2C, SLC8A3,RBFOX1,DNAH11,NIPBL,HMCN1,GRIK 2,IGSF11,CLSTN2,TANC1,ITGA8,PJA2,TAFA 4,GABRG1,EYA1,RORB,PIEZO2,GABRB1,ATP2 B2,FYN,DLGAP1,GRIN2B,GRIA1,NAV2,FGF12 ,CACNG2,BTBD9,PCDH15,GABRG3,TMOD2,TJP 1,LRIG1,RIMS1,BRINP1,NRXN1,WASF3,PIAS 1,PBX3,SLC4A10,HERC1,BBS2,PRKN,BBS9,A DGRB3,MYO9A,MYO3A,NTRK2,PLCB1,MAPK1,D GKI,EGFR,PTPRQ,BCR,LARGE1,TMPRSS3,SOR CS3,SCN2A,POU6F2,GRM5,ATP8A1,NLGN1,AB*

			L1,OR9Q1,JAM2,GRID2,LRP2,PAK5,CACNB2, MTMR2,ATF6,EYS,SHANK2,INSR,PPIP5K2,SY NJ1,ATXN1,GABRG2,NRXN3,RIMS2,KCNQ3,SC N8A,DLGAP2,KCND2,ATP8A2,LHFPL3,CTNNA2 ,ADGRV1,RELN,ROR1,SNAI2,TNR,CELF4,CRB 1,USH1C,APP,SLC6A3
GO:000742 3	sensory organ developmen t	0.00009261 19156662271 53	*PDE6A,MITF,MYO3B,NRP1,NFIA,STAU2,DCLK 1,NIPBL,ITGA8,PBX1,EYA1,RORB,ATP2B2,S PRED1,NOTCH2,PCDH15,ABCB5,MEGF11,LRIG 1,LAMA1,GLI3,FBN1,WDPCP,PBX3,CACNA1C, SCAPER,MYO3A,NTRK2,MAPK1,DSCAM,NFIB,E GFR,PTPRQ,BCR,LARGE1,TENM3,MED1,SMOC1 ,FAT3,FGF10,ATF6,SP3,FAT1,BMPR1B,ATP8 A2,ADGRV1,BNC2,ROR1,PPP2R3A,CELF4,CRB 1,USH1C,SLC6A3*
GO:199013 8	neuron projection extension	0.00009854 85003272721 66	*MACF1,NRP1,SLC23A2,SEMA3A,ALCAM,DCLK1 ,SLC39A12,DISC1,SLIT3,RIMS1,ITGA4,SYT 1,ARHGAP32,PRKN,DSCAM,DIP2B,ABL1,SEMA 6D,VCL,ULK2,RIMS2,SEMA5A,AUTS2,CYFIP2 ,TNR*
GO:007235 9	circulatory system developmen t	0.00013542 77493306566 74	*ERBB4,SETD2,EPN2,ALPK3,NRP1,CDH13,PRK CB,SLC8A1,STARD13,DNAH11,ADAMTS9,NIPB L,NEBL,SLC39A12,EYA1,AGO2,SLIT3,ANTXR 1,TAFA5,SPRED1,FGF12,TPM1,NOTCH2,TJP1 ,LAMA1,JCAD,GLI3,NRXN1,NTRK3,SGCG,FBN 1,WDPCP,HMGA2,FHOD3,GREB1L,MYO1E,ROCK 1,CACNA1C,COL4A2,RORA,ADGRB3,NTRK2,MA PK1,PRKG1,THSD7A,EGFR,AKAP6,LARGE1,ME D1,ENPEP,AIMP1,ABL1,JARID2,LRP2,SETDB 2,RYR2,NFATC2,FGF10,SOX6,SGCD,VCAM1,R APGEF2,INSR,AKAP13,IMMP2L,NRXN3,CPE,S EMA5A,ARHGAP24,APC,SNAI2,AKT3,VAV3,BC AS3,PRKCA,DNAH5,PDLIM5,SMAD5,ALPK2,AS B2,ADGRB1*
GO:003164 4	regulation of nervous system process	0.00017099 71627474011 97	*NETO2,HTR2C,SLC8A3,GRIK2,IGSF11,TAFA4 ,DLGAP1,GRIN2B,FGF12,RIMS1,NRXN1,WASF 3,NLGN1,JAM2,MTMR2,RIMS2,DLGAP2,RELN, TNR,CELF4,APP*
GO:004408 7	regulation of cellular component biogenesis	0.00019759 37469225298 88	*MACF1,PAK1,KIRREL1,AMBRA1,SYNE2,MYO3B ,NRP1,EPS8,LRFN5,ARHGEF7,STAU2,CEP120 ,CDC42EP3,CLSTN2,ADGRL2,CORO2B,VPS41, MYO10,SLC39A12,ARHGAP28,FMN1,PEAK1,SV IL,ANTXR1,TRABD2B,NEGR1,TPM1,SRGAP2C, TMOD2,TJP1,FCHSD2,NRXN1,WDPCP,FHOD3,R OCK1,PRKAA2,DNM3,PRKN,SACS,PTPRD,ADGR B3,MYO3A,NTRK2,SDCBP,STXBP6,LDB2,SNX3 0,NLGN1,ABL1,GRID2,FER,SETDB2,MTPN,PD E4DIP,VCL,RAPGEF2,ARFGEF1,RHPN2,PPM1F ,ARHGAP24,MAP4K4,APC,AUTS2,MTMR3,SNAI 2,CYFIP2,PTPN13,PRKCA,APP,PDLIM5,ADGR B1,CCDC88A*
GO:003422 0	monoatomic ion transmembr ane transport	0.00020275 7390508728	*SLMAP,KCNMA1,SLC17A1,SLC6A11,UTRN,SLC 8A1,HTR2C,KCNC1,CACNA1E,TMEM63C,AFG3L 2,CNKSR3,SLC8A3,SLC40A1,ATP11C,SLC9C1 ,GRIK2,GRIK4,GABRG1,ATP10A,SLC39A12,H ECW2,PIEZO2,GABRB1,ATP2B2,FYN,NALCN,S LC1A2,RGS7,GRIN2B,GRIA1,FGF12,CACNG2, GABRG3,PDE4D,ITPR2,DPP6,GRID1,CACNA2D*

			3,SLC4A10,ABCC9,CACNA1C,TRPM7,PLCB1,G RIK1,CUL5,PRKG1,CLCN5,AKAP6,LARGE1,ME LTF,SLC12A1,SCN2A,GRM5,ATP8A1,ABL1,GR ID2,RYR2,GRIK3,CACNB2,KCNH5,LRRC8B,NO S1AP,TRPM3,UNC80,GABRG2,KCNQ3,SCN8A,K CND2,SLC24A3,GRIA4,RELN,KCNJ15,SLC4A4 ,OCA2,KCNS3,SLC6A3
GO:000810 4	protein localization	0.00021100 0269933596 15	*SLMAP,ERBB4,FYB2,CUBN,MACF1,PAK1,SETD 2,SLC15A5,NETO2,DOP1B,NRP1,TANGO2,HER C2,PRKCB,GPC5,LYPLA1,STAU2,SIAH3,TBC1 D5,EXOC6B,RFX3,PIK3C3,DCLK1,DNAH11,AD AMTS9,NIPBL,CEP120,GRIK2,SNX25,IGSF11 ,CCDC186,ODR4,CORO2B,ITGA8,SYCP1,VPS4 1,ASB3,TOM1L2,TTC21B,COG2,DISC1,CLTCL 1,RIC3,GPR158,APBA2,LYST,FRMD6,FYN,CR EBBP,ZBTB16,CADPS,LRBA,SGTB,LRP1B,AP5 M1,MYO5A,CACNG2,TSPAN33,NPIPA1,ESR1,T JP1,RIMS1,FCHSD2,GLI3,NRXN1,FRMD4A,FB N1,LONP2,WDPCP,RAPGEF4,EHBP1,DPP6,SEL 1L,ZDHHC17,ITGA4,ROCK1,PRKAA2,RGPD4,P ACRG,BBS2,PRKN,LATS2,EXOC4,DLG2,SCFD2 ,BBS9,PTPRN2,RANBP3L,PLCB1,SDCBP,NBEA ,EGFR,BCR,MAGI2,AKAP6,LARGE1,STX12,TB C1D1,MED1,GNPTAB,SPIRE1,WDR72,SNX30,P ID1,NLGN1,ABL1,JARID2,GRID2,LRP2,RANB P17,ERBIN,MON2,RYR2,SCAMP1,MCC,CACNB2 ,STXBP4,MAPRE2,FGF10,KIF13A,IPO11,VCL ,ZDHHC21,RAPGEF2,ILDR2,IMMP2L,DENND4C ,ARFGEF1,TANGO6,NRXN3,RIMS2,PPM1F,KCN Q3,SNX8,NSG1,CPE,PYGO1,MAP4K4,EFR3A,A PC,APLF,GPC6,PARD3B,ADGRV1,RELN,AKAP1 1,VPS13C,NDFIP1,SNAP91,CRB1,FCHO2,HEP ACAM,USP8,USH1C,FMN2,ERC1,DNAJC13,CCD C88A,RAP1GDS1*
GO:003621 1	protein modificatio n process	0.00022171 6800006583 42	*ERBB4,KLHL13,RNF38,PAK1,PCMTD2,TRIO,S ETD2,KIRREL1,AMBRA1,ALPK3,MYO3B,NRP1, FRY,RC3H1,RPS6KA5,TAOK3,HERC2,ABL2,PR KCB,SLC8A1,LYPLA1,MAN2A2,LNPEP,CDK12, GALNT13,NEK4,USP14,ST8SIA4,CNKSR3,TRI M2,SLC8A3,MGAT5,USP24,SLCO3A1,PDZRN3, PIK3C3,DCLK1,CDC42BPA,NIPBL,MARCHF6,C CNG2,PJA2,ASB3,NEK6,MOB1B,HECW2,PEAK1 ,EYA1,KSR1,TTC3,TTLL7,ST8SIA1,FYN,CRE BBP,ZBTB16,PRMT8,B4GALT6,STK32A,OTUD7 A,TRABD2B,SPRED1,KANSL1,DPH6,NOTCH2,P DE4D,PTPRT,PRKACB,PTPN4,GXYLT2,HIPK3, TRIM9,WSB1,LAMA1,MAST4,NRXN1,NTRK3,PR RC1,NEK10,PIAS1,ST6GALNAC3,PTAR1,GALN T10,HMGA2,HHAT,PARP8,ZDHHC17,PKN2,ROC K1,HERC1,UBR1,PRKAA2,PRKN,TRPM7,SIAH2 ,LATS2,PTPRD,CDC14B,PTPRN2,HDAC4,MYO3 A,NTRK2,MAPK1,CUL5,PRKG1,BIRC6,DIP2B, NLK,SPOP,EGFR,PTPRQ,BCR,MAGI2,LARGE1, FANCM,FUT9,GALNTL6,MOK,PDP2,RNF152,ZN RF3,GNAQ,ITPKB,GRM5,MED1,MTMR7,EPHA6, PID1,ABL1,PTPRG,PIGN,PCMTD1,PPM1L,FER ,PAK5,SETDB2,FBXL17,GALNT14,PRLR,MTMR 2,FBXL7,FGF10,NOS1AP,CADM1,RC3H2,MSRA ,STK32B,ZDHHC21,RAPGEF2,INSR,PDK1,KLF*

			15,ARFGEF1,ENPP1,ULK2,PPM1F,EGLN3,GFR A1,BMPR1B,CPE,KITLG,MAP4K4,DOCK3,PRAM E,APC,MARCHF1,RELN,MACROD2,EOGT,AUTS2 ,ROR1,PPP2R3A,MTMR3,BMP2K,NDFIP1,PTPN 13,AKT3,ST8SIA6,PRKCA,KMT2C,USP8,ERC1 ,APP,RPS6KA3,SMAD5,ALPK2,ASB2,EYA2,MA PK8IP1,ADGRB1,CCDC88A
GO:001470 6	striated muscle tissue developmen t	0.00024460 70037288048	*ERBB4,ALPK3,SLC8A1,ADAMTS9,NEBL,EYA1, TPM1,NOTCH2,SGCG,FHOD3,PRKG1,AKAP6,LA RGE1,MED1,ABL1,JARID2,LRP2,RYR2,MTPN, SOX6,SGCD,AKAP13,PGM5,MRTFB,PDLIM5,SM AD5,ALPK2,ASB2,EYA2*
GO:009917 5	regulation of postsynapse organization	0.00024702 99715546877	*RPS6KA5,STAU2,TANC1,DISC1,ASAP1,FYN,G RIN2B,DGKB,NRXN1,GRID1,DNM3,PTPRD,PPF IA2,NLGN1,GRID2,SHANK2,RELN,PDLIM5*
GO:007072 7	cellular macromolec ule localization	0.00026752 16688489574	*SLMAP,ERBB4,FYB2,CUBN,MACF1,PAK1,SETD 2,SLC15A5,NETO2,DOP1B,NRP1,TANGO2,HER C2,PRKCB,GPC5,LYPLA1,STAU2,SIAH3,TBC1 D5,EXOC6B,RFX3,PIK3C3,DCLK1,DNAH11,AD AMTS9,NIPBL,CEP120,GRIK2,SNX25,IGSF11 ,CCDC186,ODR4,CORO2B,ITGA8,SYCP1,VPS4 1,ASB3,TOM1L2,TTC21B,COG2,DISC1,CLTCL 1,RIC3,GPR158,APBA2,LYST,FRMD6,FYN,CR EBBP,ZBTB16,CADPS,LRBA,SGTB,LRP1B,AP5 M1,MYO5A,CACNG2,TSPAN33,NPIPA1,ESR1,T JP1,RIMS1,FCHSD2,GLI3,NRXN1,FRMD4A,FB N1,LONP2,WDPCP,RAPGEF4,EHBP1,DPP6,SEL 1L,ZDHHC17,ITGA4,ROCK1,PRKAA2,RGPD4,P ACRG,BBS2,PRKN,LATS2,EXOC4,DLG2,SCFD2 ,BBS9,PTPRN2,RANBP3L,PLCB1,SDCBP,NBEA ,EGFR,BCR,MAGI2,AKAP6,LARGE1,STX12,TB C1D1,MED1,GNPTAB,SPIRE1,WDR72,SNX30,P ID1,NLGN1,ABL1,JARID2,GRID2,LRP2,RANB P17,ERBIN,MON2,RYR2,SCAMP1,MCC,CACNB2 ,STXBP4,MAPRE2,FGF10,KIF13A,IPO11,VCL ,ZDHHC21,RAPGEF2,ILDR2,IMMP2L,DENND4C ,ARFGEF1,TANGO6,NRXN3,RIMS2,PPM1F,KCN Q3,SNX8,NSG1,CPE,PYGO1,MAP4K4,EFR3A,A PC,APLF,GPC6,PARD3B,ADGRV1,RELN,AKAP1 1,VPS13C,NDFIP1,SNAP91,CRB1,FCHO2,HEP ACAM,USP8,USH1C,FMN2,ERC1,DNAJC13,CCD C88A,RAP1GDS1*
GO:003134 6	positive regulation of cell projection organization	0.00030640 89061144467 97	*MACF1,MYO3B,NRP1,EPS8,ABL2,ARHGEF7,ST AU2,CEP120,CDC42EP3,DISC1,FYN,ARSB,NE GR1,TOX,NRXN1,NTRK3,DNM3,ARHGAP32,PTP RD,MYO3A,NTRK2,DSCAM,MAGI2,FUT9,CNTN1 ,TENM3,NLGN1,ABL1,RAPGEF2,SEMA5A,ATP8 A2,APC,RELN,AUTS2,ROR1,CCDC88A*
GO:004881 3	dendrite morphogene sis	0.00032270 02950665697	*CTNND2,NRP1,STAU2,SEMA3A,DCLK1,SDC2,P HACTR1,HECW2,FYN,RERE,DNM3,PTPRD,ADGR B3,DSCAM,PPFIA2,DOCK10,NLGN1,RAPGEF2, CTNNA2,RELN,PDLIM5*
GO:000726 5	Ras protein signal transduction	0.00036154 09349068819	*NRP1,CDH13,EPS8,ABL2,ARHGEF12,STARD13 ,RGL1,RALGPS1,ARHGAP42,KSR1,NOTCH2,MA DD,RAPGEF4,ROCK1,ARHGEF11,SDCBP,DGKI, BCR,ARHGEF28,ITPKB,ABL1,ELMO1,MAPRE2,*

			FGF10,RAPGEF2,RAPGEF5,AKAP13,DENND4C, ARFGEF1,KITLG,ARHGAP24,MAP4K4,AUTS2,U SP8,PSD3
GO:005113 0	positive regulation of cellular component organization	0.00041698 6384345274 8	*MACF1,PAK1,KIRREL1,AMBRA1,MYO3B,NRP1, EPS8,ABL2,ARHGEF7,STAU2,FYCO1,TBC1D5, CEP120,CDC42EP3,CLSTN2,ADGRL2,ATP10A, DISC1,FMN1,ASAP1,FRMPD4,FYN,ARSB,TRAB D2B,NEGR1,TPM1,TOX,ERC2,FCHSD2,NRXN1, NTRK3,WASF3,ROCK1,DNM3,SYT1,ARHGAP32, PRKN,PTPRD,ADGRB3,MYO3A,NTRK2,PLCB1,M APK1,SDCBP,DSCAM,BCR,MAGI2,MELTF,FUT9 ,ANKFY1,CNTN1,TENM3,SPIRE1,SNX30,ATP8 A1,NLGN1,ABL1,GRID2,FER,SETDB2,NFATC2 ,MAPRE2,PDE4DIP,RAPGEF2,INSR,SYNJ1,PP M1F,SEMA5A,ATP8A2,MAP4K4,APC,RELN,AUT S2,ROR1,USP8,APP,ABCA13,ADGRB1,CCDC88 A*
GO:003303 6	macromolec ule localization	0.00050897 5018577836 8	*SLMAP,ERBB4,FYB2,CUBN,MACF1,PAK1,ATP9 B,SETD2,SLC15A5,NETO2,DOP1B,NRP1,TANG O2,HERC2,PRKCB,GPC5,LYPLA1,STAU2,SIAH 3,TBC1D5,EXOC6B,PLIN2,RFX3,RBFOX1,SLC O3A1,ATP11C,PIK3C3,DCLK1,DNAH11,ADAMT S9,NIPBL,CEP120,GRIK2,SNX25,IGSF11,CC DC186,SLC25A21,ODR4,CORO2B,ITGA8,SYCP 1,VPS41,ASB3,TOM1L2,ATP10A,TTC21B,ABC D2,COG2,DISC1,CLTCL1,RIC3,GPR158,APBA 2,LYST,FRMD6,FYN,CREBBP,ZBTB16,CADPS, LRBA,SGTB,LRP1B,AP5M1,MYO5A,CACNG2,TS PAN33,NPIPA1,ESR1,TJP1,RIMS1,FCHSD2,G LI3,NRXN1,FRMD4A,FBN1,LONP2,WDPCP,RAP GEF4,EHBP1,DPP6,PRELID2,SEL1L,ZDHHC17 ,ITGA4,ROCK1,PRKAA2,RGPD4,PACRG,BBS2, SLC27A6,PRKN,LATS2,EXOC4,DLG2,SCFD2,B BS9,PTPRN2,RANBP3L,PLCB1,SDCBP,ATP9A, NBEA,EGFR,BCR,MAGI2,AKAP6,LARGE1,STX1 2,TBC1D1,MED1,GNPTAB,SPIRE1,WDR72,SNX 30,ATP8A1,PID1,NLGN1,ABL1,JARID2,GRID 2,LRP2,RANBP17,ERBIN,MON2,RYR2,SCAMP1 ,MCC,CACNB2,STXBP4,VSTM2A,MAPRE2,FGF1 0,KIF13A,IPO11,VCL,ZDHHC21,XKR6,RAPGE F2,ILDR2,IMMP2L,DENND4C,ARFGEF1,ENPP1 ,TANGO6,NRXN3,RIMS2,PPM1F,KCNQ3,SNX8, NSG1,CPE,ATP8A2,PYGO1,MAP4K4,EFR3A,AP C,APLF,GPC6,PARD3B,ABCA5,ADGRV1,RELN, AKAP11,VPS13C,NDFIP1,SNAP91,CRB1,FCHO 2,RFTN2,HEPACAM,USP8,USH1C,FMN2,ERC1, DNAJC13,VPS13B,ABCA13,CCDC88A,RAP1GDS 1*
GO:190253 1	regulation of intracellular signal transduction	0.00051890 8572083241 6	*ERBB4,PAK1,TRIO,NRP1,CDH13,RC3H1,EPS8 ,TAOK3,ABL2,PRKCB,ARHGEF12,ANKRD6,HTR 2C,CNKSR3,SEMA3A,STARD13,LIMD1,FGD4,G RIK2,SIPA1L2,PJA2,NEK6,ARHGAP28,RALGP S1,ARHGAP42,KSR1,EDAR,FRMD6,FYN,SRGAP 2,SPRED1,GARNL3,NOTCH2,MADD,ESR1,NFAT 5,PDE4D,ARHGAP26,HIPK3,SGMS1,JCAD,NRX N1,NTRK3,NEK10,PHLPP1,ZDHHC17,ROCK1,A RHGAP31,UBR1,PRKAA2,ARHGEF11,ARHGAP32 ,PRKN,RORA,DGKG,MYO9A,NTRK2,PLCB1,MAP K1,SDCBP,DGKI,EGFR,BCR,MAGI2,AKAP6,AR*

			HGEF28,IQCJ-SCHIP1,RNF152,ITPKB,GRM5,NLGN1,ABL1,NCOR1,LRP2,PAK5,MAPRE2,FGF10,NOS1AP,RC3H2,SEZ6L,RAPGEF2,SHANK2,ZMYND11,INSR,SRGAP3,AKAP13,DENND4C,ARFGEF1,DENND2B,MAPKBP1,SEMA5A,KITLG,ARHGAP24,MAP4K4,DOCK3,ADGRV1,RELN,AUTS2,ROR1,SNAI2,NDFIP1,AKT3,VAV3,PRKCA,APP,PSD3,MAPK8IP1,RAP1GDS1
GO:0007626	locomotory behavior	0.000544609362154569 2	EPS8,HTR2C,APBA2,NEGR1,NAV2,FGF12,BTBD9,PCDH15,PBX3,SLC4A10,PRKN,DSCAM,LARGE1,CNTN1,GRM5,NCOR1,PAK5,GNG7,SHANK2,ZFHX3,ASTN1,KCND2,RELN,TNR,APP,SLC6A3
GO:0007411	axon guidance	0.000597065481933205 1	TRIO,NRP1,RPS6KA5,CNTN4,SEMA3A,ALCAM,NCAM1,FYN,SLIT3,NOTCH2,GLI3,NRXN1,PTPRD,DSCAM,NFIB,CNTN1,EPHA6,SEMA6D,UNC5D,NRXN3,BMPR1B,SEMA5A,RELN,CYFIP2,ADAMTSL1,TNR,CNTN6,APP
GO:0097485	neuron projection guidance	0.000597065481933205 1	TRIO,NRP1,RPS6KA5,CNTN4,SEMA3A,ALCAM,NCAM1,FYN,SLIT3,NOTCH2,GLI3,NRXN1,PTPRD,DSCAM,NFIB,CNTN1,EPHA6,SEMA6D,UNC5D,NRXN3,BMPR1B,SEMA5A,RELN,CYFIP2,ADAMTSL1,TNR,CNTN6,APP
GO:2001222	regulation of neuron migration	0.000669163082052948 1	SEMA3A,NIPBL,PHACTR1,SRGAP2,SRGAP2C,ARHGAP32,NRG3,NTNG1,RAPGEF2,UNC5D,CTNNA2,RELN
GO:0098815	modulation of excitatory postsynaptic potential	0.000669163082052948 1	SLC8A3,GRIK2,IGSF11,GRIN2B,RIMS1,NRXN1,NLGN1,MTMR2,RIMS2,RELN,CELF4,APP
GO:0006811	monoatomic ion transport	0.000863756424005231 6	SLMAP,KCNMA1,SLC17A1,SLC6A11,PRKCB,SLC23A2,UTRN,SLC8A1,HTR2C,KCNC1,CACNA1E,TMEM63C,AFG3L2,CNKSR3,SLC8A3,SLC40A1,SLCO3A1,ATP11C,SLC9C1,GRIK2,NKAIN3,GRIK4,GABRG1,ATP10A,SLC39A12,HECW2,PIEZO2,GABRB1,ATP2B2,FYN,NALCN,SLC1A2,RGS7,GRIN2B,GRIA1,FGF12,CACNG2,CLDN10,GABRG3,PDE4D,ITPR2,DPP6,GRID1,CACNA2D3,SLC4A10,ABCC9,CACNA1C,TRPM7,TG,PLCB1,GRIK1,CUL5,PRKG1,CLCN5,AKAP6,LARGE1,MELTF,SLC12A1,SCN2A,CNTN1,GRM5,ATP8A1,ABL1,GRID2,LRP2,RYR2,GRIK3,CACNB2,KCNH5,LRRC8B,NOS1AP,TRPM3,UNC80,GABRG2,KCNQ3,SCN8A,KCND2,SLC24A3,GRIA4,RELN,KCNJ15,CYBRD1,SLC4A4,NDFIP1,OCA2,KCNS3,SLC6A3
GO:0016310	phosphorylation	0.00101950 1923719903 4	ERBB4,PAK1,TRIO,KIRREL1,AMBRA1,ALPK3,MYO3B,NRP1,RPS6KA5,TAOK3,ABL2,PRKCB,SLC8A1,CDK12,NEK4,CNKSR3,SLC8A3,SLCO3A1,LIMD1,PIK3C3,DCLK1,CDC42BPA,CCNG2,NEK6,MOB1B,PEAK1,KSR1,FYN,SH3KBP1,STK32A,SPRED1,DGKB,NOTCH2,PDE4D,PTPRT,PRKACB,PTPN4,HIPK3,SGMS1,LAMA1,MAST4,NRXN1,NTRK3,PRRC1,NEK10,HMGA2,PKN2,ROCK1,PRKAA2,GRB10,PRKN,TRPM7,LATS2,DGKG,M

			YO3A,NTRK2,MAPK1,SDCBP,PRKG1,DSCAM,BI RC6,DGKI,NLK,EGFR,BCR,MAGI2,LARGE1,MO K,GNAQ,ITPKB,GRM5,GNPTAB,EPHA6,LDB2,P ID1,ABL1,FER,PAK5,PRLR,FGF10,CADM1,ST K32B,RAPGEF2,INSR,PDK1,PPIP5K2,ENPP1, ULK2,PPM1F,GFRA1,BMPR1B,KITLG,MAP4K4, DOCK3,APC,RELN,ROR1,BMP2K,PTPN13,AKT3 ,VAV3,PRKCA,ERC1,APP,RPS6KA3,SMAD5,AL PK2,MAPK8IP1,CCDC88A
GO:000701 5	actin filament organization	0.00113183 0446769906 1	*PAK1,KIRREL1,NRP1,EPS8,CDC42EP3,MYO5C ,CORO2B,NEBL,FAM171A1,PHACTR1,ARHGAP2 8,FMN1,SVIL,SH3KBP1,MYO5A,TPM1,PCDH15 ,TMOD2,TJP1,FCHSD2,WASF3,FHOD3,MYO1E, ROCK1,PRKN,SPIRE1,ABL1,MICAL3,ELMO1,F ER,MTPN,ARFGEF1,FAT1,RHPN2,PPM1F,SEMA 5A,CTNNA2,CYFIP2,USH1C,FMN2,CCDC88A*
GO:003297 0	regulation of actin filament-based process	0.00119663 9770144541 9	*PAK1,KIRREL1,MYO3B,NRP1,EPS8,STAU2,CD C42EP3,CORO2B,ARHGAP28,FMN1,SVIL,FRMD 6,TPM1,TMOD2,PDE4D,TJP1,FCHSD2,WASF3, FHOD3,ROCK1,CACNA1C,PRKN,MYO3A,ABL1,F ER,RYR2,MTPN,AKAP13,ARFGEF1,RHPN2,PPM 1F,SEMA5A,CTNNA2,CYFIP2,BCAS3,CCDC88A*
GO:003287 9	regulation of localization	0.00143286 6037353989 8	*SLMAP,ERBB4,KCNMA1,SETD2,NETO2,NRP1,C DH13,ABL2,PRKCB,ARHGEF7,UTRN,GPC5,SLC 8A1,LYPLA1,HTR2C,KCNC1,DYSF,CACNA1E,S IAH3,TBC1D5,CNKSR3,PLIN2,RFX3,DCLK1,C EP120,NKAIN3,CORO2B,SYCP1,TTC21B,CLTC L1,SV2B,HECW2,RIC3,FYN,NALCN,CREBBP,S LC1A2,CADPS,RGS7,GRIN2B,FGF12,CACNG2, BTBD9,CLDN10,PDE4D,ERC2,RIMS1,GLI3,IT PR2,NRXN1,FRMD4A,WDPCP,RAPGEF4,DPP6,C ACNA2D3,ABCC9,GSG1L,ROCK1,CACNA1C,PRK AA2,DNM3,SYT1,GRB10,PRKN,LATS2,PTPRN2 ,PLCB1,MAPK1,SDCBP,ATP9A,PRKG1,NBEA,E GFR,PPFIA2,STXBP6,BCR,MAGI2,AKAP6,ANK FY1,TBC1D1,SCN2A,CNTN1,GRM5,AIMP1,ATP 8A1,PID1,NLGN1,ABL1,FER,RYR2,CACNB2,S TXBP4,VSTM2A,MTMR2,KCNH5,FGF10,NOS1AP ,VCL,INSR,WDR41,KLF15,ENPP1,RIMS2,PPM 1F,KCNQ3,SCN8A,KCND2,ATP8A2,SV2C,MAP4 K4,CNIH3,APC,GPC6,ABCA5,RELN,KCNJ15,B MP2K,NDFIP1,SNAP91,USP8,KCNS3,APP,DNA JC13,ABCA13,CCDC88A,GHRH,RAP1GDS1*
GO:009874 2	cell-cell adhesion via plasma- membrane adhesion molecules	0.00143466 0978009930 8	*CDH13,LRFN5,CNTN4,PCDH7,LRRC4C,CADM2, ALCAM,HMCN1,IGSF11,CLSTN2,CLDN10,PCDH 15,PTPRT,NRXN1,CDH20,PTPRD,DSCAM,TENM 3,NLGN1,GRID2,FAT3,NTNG1,CADM1,PCDH9, VCAM1,CDH7,UNC5D,FAT1,CRB1,CNTN6*
GO:001097 6	positive regulation of neuron projection developmen t	0.00146489 7018879556 3	*NRP1,ABL2,STAU2,DISC1,FYN,ARSB,NEGR1, TOX,NRXN1,NTRK3,NTRK2,MAGI2,FUT9,CNTN 1,TENM3,NLGN1,ABL1,RAPGEF2,ATP8A2,REL N,ROR1*
GO:001604	cellular	0.00174011	*HPSE2,ERBB4,KCNMA1,APBB2,MACF1,PAK1,C*

3	component organization	4127516410 3	TNND2,FRMD3,SCAF8,COL22A1,ATP9B,TRIO, MITF,RTN1,SETD2,KIRREL1,AMBRA1,CHD9,S YNE2,DOP1B,MYO3B,NRP1,TEAD1,NFIA,FRY, CDH13,RC3H1,RPS6KA5,EPS8,TANGO2,TAOK3 ,LRFN5,ABL2,PRKCB,SLC23A2,ARHGEF7,PHA CTR3,EML1,PRR16,RERG,KCNC1,DYSF,STAU2 ,SIAH3,FYCO1,CNTN4,TBC1D5,EXOC6B,AFG3 L2,FRMD5,SEMA3A,PLIN2,SLC8A3,RFX3,STA RD13,MMP16,LRRC4C,ALCAM,ATP11C,PDZRN3 ,LIMD1,PIK3C3,DCLK1,ADAMTS9,CDC42BPA, NIPBL,CEP120,CDC42EP3,CHD6,HMCN1,FGD4 ,MYO5C,SDC2,NCAM1,CLSTN2,KDM4B,ADGRL2 ,TANC1,CORO2B,NEBL,ITGA8,SYCP1,VPS41, MYO10,TCF4,TOM1L2,FAM171A1,ATP10A,PHA CTR1,BICRAL,TTC21B,NEK6,ABCD2,SLC39A1 2,COG2,ARHGAP28,DISC1,HECW2,RIC3,FMN1 ,PEAK1,EYA1,SVIL,ASAP1,TTLL7,LYST,FRM PD4,COL23A1,PLEKHA3,FYN,SH3KBP1,AGO2, CREBBP,SLC1A2,PRMT8,CSMD3,LRBA,B4GALT 6,SLIT3,SGTB,GRIN2B,ANTXR1,SRGAP2,ARS B,GRIA1,TRABD2B,NEGR1,MYO5A,NAV2,DGKB ,CACNG2,TSPAN33,KANSL1,BTBD9,TPM1,COL 19A1,NOTCH2,FLNB,TOX,CLDN10,PCDH15,ES R1,NFAT5,SRGAP2C,TMOD2,TJP1,ARHGAP26, ERC2,PTPRT,PRKACB,RIMS1,WSB1,FCHSD2,P ARVB,LAMA1,GLI3,GOLGA8S,MAST4,NRXN1,S UPT16H,NTRK3,WASF3,LONP2,ARID1B,HYDIN ,TRAPPC10,TSPAN2,WDPCP,MAGI1,CNKSR2,A NKRD31,PIAS1,CDH20,PRELID2,HMGA2,CTTN BP2,FHOD3,GRID1,RERE,ATL1,MYO1E,ZDHHC 17,PKN2,ITGA4,HFM1,GSG1L,ROCK1,HERC1, CFAP70,DOCK1,PRKAA2,ARHGEF11,CCSER2,C OL4A2,DNM3,SYT1,BBS2,ARHGAP32,PRKN,DP F3,TRPM7,SIAH2,EXOC4,SACS,PTPRD,CDC14 B,BBS9,TLN2,HDAC4,ADGRB3,DGKG,MYO9A,M YO3A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,AT P9A,BPTF,TASOR2,PRKG1,DSCAM,NFIB,DIP2 B,NBEA,EGFR,PPFIA2,STXBP6,NCAM2,BCR,M AGI2,AKAP6,LARGE1,TRAPPC8,RTTN,STX12, FANCM,ARHGEF28,MELTF,FUT9,ANKFY1,IQCJ - SCHIP1,SLC12A1,CNTN1,DOCK10,TENM3,GRM 5,MED1,GNPTAB,EPHA6,SPIRE1,PHACTR2,CO L14A1,WDR72,SNX30,NRG3,ATP8A1,PID1,NL GN1,ABL1,PTPRG,NCOR1,JARID2,MICAL3,GR ID2,ELMO1,LRP2,ERBIN,SEMA6D,CABIN1,KH DC4,SMOC1,FER,PAK5,SETDB2,PRLR,NFATC2 ,DST,FAT3,CACNB2,NTNG1,MED15,MTPN,MTM R2,LRP12,MAPRE2,FGF10,KIF13A,NOS1AP,P DE4DIP,MPDZ,YLPM1,TRPM3,VCL,SEZ6L,XKR 6,RAPGEF2,CDH7,IFT81,SHANK2,ZMYND11,I NSR,AKAP13,IMMP2L,SYNJ1,CHCHD6,UNC5D, KDM1B,GABRG2,ARFGEF1,FAT1,PATJ,ENPP1, ULK2,UNC13C,ZNF462,NRXN3,RIMS2,RHPN2, PPM1F,KCNQ3,PGM5,GFRA1,BMPR1B,NSG1,KC ND2,SEMA5A,ATP8A2,GOLGA8T,PYGO1,ARHGA P24,MAP4K4,CTNNA2,APC,APLF,PARD3B,DNE R,ABCA5,ADGRV1,RELN,AKAP11,VPS13C,AUT S2,ROR1,MTMR3,BMP2K,SNAI2,CYFIP2,ADAM

			TSL1,TNR,PTPN13,SNAP91,OCA2,CELF4,AKT 3,CRB1,VAV3,BCAS3,FCHO2,PRKCA,KMT2C,U SP8,USH1C,DNAH5,CNTN6,KCNS3,FMN2,ERC1 ,APP,PDLIM5,RPS6KA3,BTAF1,DNAJC13,NYA P2,VPS13B,ABCA13,ASB2,EYA2,ADGRB1,CCD C88A,RAP1GDS1,SPOCK1
GO:004864 6	anatomical structure formation involved in morphogene sis	0.00180685 7874634180 7	*SETD2,EPN2,NRP1,CDH13,RC3H1,PRKCB,STA RD13,SLC40A1,ADAMTS9,KIF16B,TANC1,NEB L,ITGA8,TTC21B,SLC39A12,FMN1,EYA1,EDA R,AGO2,TAFA5,SPRED1,TPM1,NOTCH2,TMOD2 ,MEGF11,TJP1,PRKACB,JCAD,GLI3,NRXN1,H MGA2,FHOD3,ITGA4,ROCK1,HERC1,DOCK1,CO L4A2,LATS2,EXOC4,RORA,ADGRB3,MAPK1,LA MB1,DSCAM,NFIB,THSD7A,LARGE1,CNTN1,ME D1,ENPEP,AIMP1,WDR72,NRG3,ABL1,JAM2,G RID2,LRP2,NFATC2,FAT3,MTPN,MTMR2,FGF1 0,SP3,AKAP13,NRXN3,PGM5,SEMA5A,ATP8A2 ,ARHGAP24,RELN,PPP2R3A,SNAI2,AKT3,CRB 1,VAV3,BCAS3,PRKCA,VPS13B,EYA2,ADGRB1*
GO:002195 3	central nervous system neuron differentiati on	0.00208237 2472691734 6	*NRP1,MDGA2,DCLK1,TTC21B,DISC1,GABRB1, B4GALT6,TOX,ZSWIM6,GLI3,BRINP1,NRXN1, SLC4A10,HERC1,RORA,NTRK2,NFIB,ARHGEF2 8,GRID2,MTPN,RAPGEF2,BMPR1B,SPOCK1*
GO:005080 6	positive regulation of synaptic transmissio n	0.00219053 2304949294 4	*SLC8A3,GRIK2,IGSF11,CLSTN2,NALCN,GRIN 2B,GRIA1,CACNG2,RIMS1,NRXN1,SYT1,NTRK 2,MAPK1,LARGE1,NLGN1,ABL1,SHANK2,RIMS 2,NSG1,RELN,TNR,APP*
GO:004212 7	regulation of cell population proliferation	0.00226555 5167215828 2	*HPSE2,ERBB4,MACF1,PAK1,MITF,AMBRA1,SY NE2,MYO3B,NRP1,CDH13,RC3H1,EPS8,ABL2, ARHGEF7,DACH1,RERG,STAU2,SEMA3A,LRRC4 C,CEP120,CDC42EP3,SDC2,MYO10,PBX1,BIC RAL,SLC39A12,DISC1,HECW2,EYA1,KSR1,ST 8SIA1,FYN,ZBTB16,CSMD3,SLIT3,GRIN2B,A RSB,TAFA5,NEGR1,TPM1,NOTCH2,TOX,ESR1, SRGAP2C,TJP1,JCAD,GLI3,NRXN1,NTRK3,WD PCP,PIAS1,HMGA2,ITGA4,DNM3,ARHGAP32,P TPRD,HDAC4,ADGRB3,DGKG,MYO9A,MYO3A,NT RK2,MAPK1,LAMB1,SDCBP,PRKG1,DSCAM,BIR C6,NFIB,DIP2B,EGFR,PPFIA2,MAGI2,NELL1 ,FUT9,CNTN1,TENM3,MED1,AIMP1,PID1,NLG N1,ABL1,PTPRG,JARID2,GRID2,LRP2,SEMA6 D,FER,MCC,PRLR,NFATC2,FAT3,STXBP4,NTN G1,VSTM2A,FGF10,VCAM1,RAPGEF2,SHANK2, INSR,ULK2,EGLN3,BMPR1B,SEMA5A,ATP8A2, KITLG,ARHGAP24,MAP4K4,CTNNA2,PRAME,AP C,RELN,AUTS2,ROR1,SNAI2,NDFIP1,TNR,AK T3,VAV3,PRKCA,USH1C,ENPP3,APP,PDLIM5, MAPK8IP1,ADGRB1,CCDC88A,GHRH,SPOCK1*
GO:004657 8	regulation of Ras protein signal transduction	0.00229202 7793407568	*NRP1,EPS8,ABL2,STARD13,RALGPS1,ARHGAP 42,NOTCH2,MADD,DGKI,BCR,ARHGEF28,ITPK B,ABL1,MAPRE2,FGF10,AKAP13,DENND4C,AR FGEF1,KITLG,ARHGAP24,MAP4K4,AUTS2,PSD 3*

GO:000715 8	neuron cell-cell adhesion	0.00269016 9276110357 7	CNTN4,NRXN1,NCAM2,NLGN1,NRXN3,ASTN1,T NR
GO:004405 7	regulation of system process	0.00273226 3584165191	NETO2,SLC8A1,HTR2C,SLC8A3,GRIK2,IGSF1 1,CORO2B,ASB3,TAFA4,ARHGAP42,ATP2B2,D LGAP1,GRIN2B,FGF12,TPM1,PDE4D,RIMS1,D OCK4,NRXN1,WASF3,PBX3,ABCC9,ROCK1,CAC NA1C,PPP1R12B,HDAC4,PRKG1,AKAP6,NLGN1 ,ABL1,JARID2,JAM2,RYR2,CACNB2,MTPN,MT MR2,FGF10,NOS1AP,ZDHHC21,RIMS2,DLGAP2 ,RELN,TNR,CELF4,PRKCA,APP
GO:005149 3	regulation of cytoskeleto n organization	0.00312861 9582307573 7	PAK1,KIRREL1,MYO3B,NRP1,EPS8,ARHGEF7, STAU2,CEP120,CDC42EP3,CORO2B,SLC39A12 ,ARHGAP28,FMN1,SVIL,TPM1,TMOD2,TJP1,F CHSD2,WASF3,FHOD3,ROCK1,PRKAA2,PRKN,M YO3A,MAPK1,IQCJ- SCHIP1,ABL1,FER,MTPN,MAPRE2,PDE4DIP,M PDZ,AKAP13,ARFGEF1,PATJ,RHPN2,PPM1F,S EMA5A,CTNNA2,APC,CYFIP2,BCAS3,CCDC88A
GO:003476 2	regulation of transmembr ane transport	0.00349006 1954303749	SLMAP,KCNMA1,PRKCB,UTRN,SLC8A1,KCNC1, CACNA1E,CNKSR3,CLTCL1,HECW2,FYN,NALCN ,SLC1A2,RGS7,GRIN2B,FGF12,CACNG2,PDE4 D,NRXN1,DPP6,CACNA2D3,ABCC9,GSG1L,CAC NA1C,GRB10,PRKG1,AKAP6,SCN2A,GRM5,PID 1,NLGN1,ABL1,RYR2,CACNB2,STXBP4,KCNH5 ,NOS1AP,INSR,KLF15,ENPP1,KCNQ3,SCN8A, KCND2,CNIH3,RELN,KCNJ15,KCNS3,APP
GO:000716 7	enzyme-linked receptor protein signaling pathway	0.00360057 9897205072	FSTL1,ERBB4,PAK1,TRIO,EPN2,NRP1,NFIA, CDH13,PRKCB,ARHGEF7,SAMD12,LNPEP,LDLR AD4,SNX25,MBD5,KIF16B,ITGA8,ANKS1B,FY N,CREBBP,SPRED1,CRIM1,NOTCH2,PTPRT,JC AD,NRXN1,NTRK3,FBN1,MYO1E,ZDHHC17,COL 4A2,GRB10,LATS2,PTPRD,NTRK2,PLCB1,MAP K1,SDCBP,CUL5,NLK,EGFR,MAGI2,ARHGEF28 ,EPHA6,NRG3,PID1,ABL1,PTPRG,LRP2,ERBI N,PPM1L,FER,PRLR,STXBP4,GNG7,FGF10,CA DM1,ZNF106,RAPGEF2,INSR,ENPP1,GFRA1,B MPR1B,ROR1,CYFIP2,SMAD5,CCDC88A,GHRH
GO:000301 2	muscle system process	0.00393885 3496486844	SLMAP,KCNMA1,APBB2,UTRN,SLC8A1,SLC8A3 ,ASB3,ARHGAP42,FGF12,TPM1,TMOD2,PDE4D ,DOCK4,ABCC9,ROCK1,CACNA1C,ARHGEF11,B BS2,PPP1R12B,HDAC4,PRKG1,AKAP6,LARGE1 ,JARID2,RYR2,CACNB2,MTPN,NOS1AP,SGCD, ZDHHC21,KLF15,ATP8A2,DTNA,PRKCA,PDLIM 5,SMAD5,ASB2,RAP1GDS1
GO:010602 7	neuron projection organization	0.00401854 1959754992	CTNND2,STAU2,TANC1,ABCD2,FYN,GRIN2B,D NM3,PPFIA2,DOCK10,NLGN1,MTMR2,INSR,RE LN,APP,PDLIM5
GO:002305 6	positive regulation of signaling	0.00421182 0237250751	ERBB4,MACF1,PAK1,EPN2,EVC,NRP1,CDH13, RC3H1,TAOK3,PRKCB,ARHGEF7,GPC5,ANKRD6 ,HTR2C,SEMA3A,SLC8A3,MGAT5,GRIK2,IGSF 11,MBD5,CLSTN2,ITGA8,PJA2,TTC21B,NEK6 ,DISC1,KSR1,EDAR,FRMD6,FYN,NALCN,CREB BP,GRIN2B,GRIA1,SPRED1,CACNG2,NOTCH2, MADD,NFAT5,TMOD2,RIMS1,LAMA1,JCAD,NRX N1,NTRK3,WWOX,RAPGEF4,NEK10,ZDHHC17,R OCK1,SYT1,GRB10,PRKN,NTRK2,PLCB1,MAPK 1,LAMB1,SDCBP,DGKI,EGFR,AKAP6,LARGE1,

			IQCJ-SCHIP1,ITPKB,GRM5,MED1,AIMP1,NLGN1,AB L1,LRP2,PRLR,MAPRE2,FGF10,NOS1AP,RC3H 2,ATF6,RAPGEF2,SHANK2,INSR,AKAP13,RIM S2,DENND2B,BMPR1B,NSG1,MAPKBP1,SEMA5A ,KITLG,MAP4K4,ADGRV1,RELN,AUTS2,ROR1, PPP2R3A,BMP2K,CYFIP2,NDFIP1,TNR,AKT3, IL1R1,PRKCA,USP8,CNTN6,APP,MAPK8IP1,C CDC88A,GHRH
GO:001064 7	positive regulation of cell communicat ion	0.00421182 0237250751	*ERBB4,MACF1,PAK1,EPN2,EVC,NRP1,CDH13, RC3H1,TAOK3,PRKCB,ARHGEF7,GPC5,ANKRD6 ,HTR2C,SEMA3A,SLC8A3,MGAT5,GRIK2,IGSF 11,MBD5,CLSTN2,ITGA8,PJA2,TTC21B,NEK6 ,DISC1,KSR1,EDAR,FRMD6,FYN,NALCN,CREB BP,GRIN2B,GRIA1,SPRED1,CACNG2,NOTCH2, MADD,NFAT5,TMOD2,RIMS1,LAMA1,JCAD,NRX N1,NTRK3,WWOX,RAPGEF4,NEK10,ZDHHC17,R OCK1,SYT1,GRB10,PRKN,NTRK2,PLCB1,MAPK 1,LAMB1,SDCBP,DGKI,EGFR,AKAP6,LARGE1, IQCJ-SCHIP1,ITPKB,GRM5,MED1,AIMP1,NLGN1,AB L1,LRP2,PRLR,MAPRE2,FGF10,NOS1AP,RC3H 2,ATF6,RAPGEF2,SHANK2,INSR,AKAP13,RIM S2,DENND2B,BMPR1B,NSG1,MAPKBP1,SEMA5A ,KITLG,MAP4K4,ADGRV1,RELN,AUTS2,ROR1, PPP2R3A,BMP2K,CYFIP2,NDFIP1,TNR,AKT3, IL1R1,PRKCA,USP8,CNTN6,APP,MAPK8IP1,C CDC88A,GHRH*
GO:006106 1	muscle structure developmen t	0.00471003 796554207	*ALPK3,EVC,UTRN,SLC8A1,AFG3L2,RBFOX1,M YEF2,TCF12,TANC1,NEBL,ITGA8,SVIL,TPM1 ,COL19A1,FLNB,TMOD2,LAMA1,SGCG,ARID1B ,PIAS1,FHOD3,DOCK1,DPF3,RORA,RANBP3L, HDAC4,ADGRB3,PLCB1,LAMB1,PRKG1,AKAP6, LARGE1,MBNL1,MED1,JAM2,LRP2,RYR2,NFAT C2,MTPN,FGF10,SOX6,SGCD,AKAP13,ZFHX3, PGM5,DNER,PPP2R3A,MRTFB,PDLIM5,ALPK2, ASB2,ADGRB1*
GO:003295 6	regulation of actin cytoskeleto n organization	0.00482303 5599300828	*PAK1,KIRREL1,MYO3B,NRP1,EPS8,STAU2,CD C42EP3,CORO2B,ARHGAP28,FMN1,SVIL,TPM1 ,TMOD2,TJP1,FCHSD2,WASF3,FHOD3,ROCK1, PRKN,MYO3A,ABL1,FER,MTPN,AKAP13,ARFGE F1,RHPN2,PPM1F,SEMA5A,CTNNA2,CYFIP2,B CAS3,CCDC88A*
GO:004308 7	regulation of GTPase activity	0.00514584 3881090785	*ARHGEF7,TBC1D5,FGD4,RGL1,SIPA1L2,EVI5 ,RALGPS1,ARHGAP42,ASAP1,SGSM1,RGS7,SR GAP2,GARNL3,NTRK3,RAPGEF4,DOCK9,MYO9A ,NTRK2,PRKG1,DGKI,BCR,TBC1D1,DOCK10,A RAP2,MAPRE2,RAPGEF2,RAPGEF5,WDR41,ARF GEF1,ARHGAP24,MAP4K4,TBC1D9,VAV3,RAP1 GDS1*
GO:009900 3	vesicle-mediated transport in synapse	0.00541538 2690177777	*PRKCB,SV2B,CADPS,BTBD9,ERC2,RIMS1,NRX N1,RAPGEF4,SYN2,GSG1L,ROCK1,AMPH,DNM3 ,SYT1,PRKN,PPFIA2,NLGN1,SYNJ1,UNC13C, RIMS2,NSG1,SV2C,SNAP91,FCHO2,ABCA13*
GO:009964 3	signal release from synapse	0.00596213 173737856	*PRKCB,DYSF,SV2B,CADPS,ERC2,RIMS1,NRXN 1,SYN2,SYT1,PRKN,PTPRN2,DGKI,PPFIA2,N LGN1,SYNJ1,UNC13C,NRXN3,RIMS2,SV2C*

GO:000726 9	neurotransm itter secretion	0.00596213 173737856	*PRKCB,DYSF,SV2B,CADPS,ERC2,RIMS1,NRXN 1,SYN2,SYT1,PRKN,PTPRN2,DGKI,PPFIA2,N LGN1,SYNJ1,UNC13C,NRXN3,RIMS2,SV2C*
GO:014005 8	neuron projection arborization	0.00598069 0596810933	*MACF1,NRP1,SEMA3A,PHACTR1,ROCK1,MYO9A ,NLGN1,LRP2,NTNG1*
GO:000646 8	protein phosphoryla tion	0.00636224 7941254857	*ERBB4,PAK1,TRIO,KIRREL1,ALPK3,MYO3B,N RP1,RPS6KA5,TAOK3,ABL2,PRKCB,SLC8A1,C DK12,NEK4,CNKSR3,SLC8A3,SLCO3A1,PIK3C 3,DCLK1,CDC42BPA,CCNG2,NEK6,MOB1B,PEA K1,KSR1,FYN,STK32A,SPRED1,NOTCH2,PDE4 D,PTPRT,PRKACB,PTPN4,HIPK3,LAMA1,MAST 4,NRXN1,NTRK3,PRRC1,NEK10,HMGA2,PKN2, ROCK1,PRKAA2,PRKN,TRPM7,LATS2,MYO3A,N TRK2,MAPK1,PRKG1,BIRC6,NLK,EGFR,BCR,L ARGE1,MOK,GNAQ,ITPKB,GRM5,EPHA6,PID1, ABL1,FER,PAK5,PRLR,FGF10,CADM1,STK32B ,RAPGEF2,INSR,PDK1,ENPP1,ULK2,PPM1F,G FRA1,BMPR1B,KITLG,MAP4K4,DOCK3,APC,RE LN,ROR1,BMP2K,PTPN13,AKT3,PRKCA,ERC1, APP,RPS6KA3,SMAD5,ALPK2,MAPK8IP1,CCDC 88A*
GO:003158 9	cell-substrate adhesion	0.00664676 9138503404	*MACF1,NRP1,CDH13,ARHGEF7,UTRN,ADAMTS9 ,CORO2B,ITGA8,DISC1,FMN1,PEAK1,ANTXR1 ,SRGAP2,PARVB,WDPCP,ITGA4,ROCK1,DOCK1 ,TRPM7,EDIL3,LAMB1,PPFIA2,BCR,MELTF,A BL1,FER,VCL,VCAM1,ITGA9,PPM1F,FREM1,M AP4K4,SPOCK1*
GO:004863 8	regulation of developmen tal growth	0.00705934 1708998513	*ERBB4,MACF1,NRP1,SLC23A2,AFG3L2,SEMA3 A,NIPBL,MBD5,DISC1,RIMS1,SYT1,BBS2,AR HGAP32,PRKN,LATS2,PLCB1,DSCAM,DIP2B,A KAP6,ABL1,JARID2,SEMA6D,INSR,ULK2,RIM S2,SEMA5A,ATP8A2,TNR,APP,SLC6A3,GHRH*
GO:009059 6	sensory organ morphogene sis	0.00721596 2859614934	*MYO3B,STAU2,NIPBL,ITGA8,EYA1,RORB,NOT CH2,PCDH15,MEGF11,LRIG1,GLI3,FBN1,WDP CP,MYO3A,NTRK2,MAPK1,DSCAM,PTPRQ,BCR, LARGE1,TENM3,FAT3,FGF10,SP3,FAT1,ATP8 A2,PPP2R3A,CRB1,USH1C*
GO:000699 6	organelle organization	0.00725768 1503902507	*ERBB4,MACF1,PAK1,FRMD3,RTN1,SETD2,KIR REL1,AMBRA1,SYNE2,DOP1B,MYO3B,NRP1,NF IA,RC3H1,EPS8,TANGO2,PRKCB,ARHGEF7,PH ACTR3,EML1,STAU2,SIAH3,FYCO1,AFG3L2,F RMD5,PLIN2,RFX3,STARD13,LIMD1,PIK3C3, DCLK1,CDC42BPA,NIPBL,CEP120,CDC42EP3, HMCN1,FGD4,MYO5C,CORO2B,NEBL,SYCP1,VP S41,TOM1L2,FAM171A1,PHACTR1,TTC21B,NE K6,ABCD2,SLC39A12,COG2,ARHGAP28,DISC1 ,HECW2,FMN1,SVIL,ASAP1,TTLL7,LYST,FRM PD4,PLEKHA3,SH3KBP1,LRBA,SRGAP2,ARSB, MYO5A,NAV2,TPM1,FLNB,PCDH15,SRGAP2C,T MOD2,TJP1,ARHGAP26,ERC2,FCHSD2,GOLGA8 S,MAST4,NRXN1,WASF3,LONP2,ARID1B,HYDI N,TRAPPC10,WDPCP,ANKRD31,HMGA2,FHOD3, ATL1,MYO1E,HFM1,ROCK1,CFAP70,PRKAA2,A RHGEF11,CCSER2,SYT1,BBS2,PRKN,DPF3,TR PM7,PTPRD,CDC14B,BBS9,TLN2,MYO3A,PLCB 1,MAPK1,SDCBP,PRKG1,NFIB,STXBP6,BCR,L ARGE1,TRAPPC8,RTTN,STX12,FANCM,ARHGEF*

			28,ANKFY1,IQCJ-SCHIP1,GNPTAB,SPIRE1,PHACTR2,SNX30,PID1,NLGN1,ABL1,NCOR1,MICAL3,GRID2,ELMO1,ERBIN,FER,PAK5,SETDB2,DST,MTPN,MAPRE2,FGF10,KIF13A,NOS1AP,PDE4DIP,MPDZ,YLPM1,IFT81,SHANK2,INSR,AKAP13,IMMP2L,SYNJ1,CHCHD6,ARFGEF1,FAT1,PATJ,ULK2,UNC13C,NRXN3,RHPN2,PPM1F,PGM5,SEMA5A,ATP8A2,GOLGA8T,PYGO1,CTNNA2,APC,PARD3B,RELN,AKAP11,VPS13C,MTMR3,CYFIP2,SNAP91,OCA2,AKT3,VAV3,BCAS3,PRKCA,USP8,USH1C,DNAH5,FMN2,PDLIM5,DNAJC13,VPS13B,ASB2,EYA2,CCDC88A,RAP1GDS1
GO:0043547	positive regulation of GTPase activity	0.0074271560216173415	*ARHGEF7,TBC1D5,RGL1,SIPA1L2,EVI5,RALGPS1,ARHGAP42,ASAP1,SGSM1,RGS7,SRGAP2,GARNL3,NTRK3,RAPGEF4,DOCK9,MYO9A,BCR,TBC1D1,DOCK10,ARAP2,MAPRE2,RAPGEF2,RAPGEF5,WDR41,ARHGAP24,MAP4K4,TBC1D9,RAP1GDS1*
GO:0043010	camera-type eye development	0.007521626248392931	*PDE6A,MITF,NRP1,NFIA,DCLK1,RORB,ATP2B2,SPRED1,NOTCH2,MEGF11,LAMA1,GLI3,FBN1,WDPCP,CACNA1C,SCAPER,NTRK2,DSCAM,NFIB,EGFR,LARGE1,TENM3,MED1,FAT3,FGF10,SP3,FAT1,BMPR1B,ATP8A2,CELF4,CRB1,USH1C,SLC6A3*
GO:1901890	positive regulation of cell junction assembly	0.008240909143781712	*NRP1,STAU2,CLSTN2,ADGRL2,FMN1,NRXN1,ROCK1,PTPRD,ADGRB3,NTRK2,NLGN1,ABL1,GRID2,PPM1F,MAP4K4,ADGRB1*
GO:0001505	regulation of neurotransmitter levels	0.008264095241244811	*SLC6A11,PRKCB,DYSF,SV2B,SLC1A2,CADPS,ERC2,RIMS1,NRXN1,SYN2,SYT1,PRKN,PTPRN2,DGKI,PPFIA2,NLGN1,SYNJ1,UNC13C,NRXN3,RIMS2,SV2C,SLC6A3*
GO:0050954	sensory perception of mechanical stimulus	0.008264095241244811	*MYO3B,NIPBL,EYA1,PIEZO2,ATP2B2,FYN,NAV2,PCDH15,TJP1,LRIG1,MYO3A,PTPRQ,LARGE1,TMPRSS3,LRP2,PPIP5K2,KCNQ3,LHFPL3,ADGRV1,ROR1,SNAI2,USH1C*
GO:0099504	synaptic vesicle cycle	0.008861769359363137	*PRKCB,SV2B,CADPS,BTBD9,ERC2,RIMS1,NRXN1,RAPGEF4,SYN2,ROCK1,AMPH,DNM3,SYT1,PRKN,PPFIA2,NLGN1,SYNJ1,UNC13C,RIMS2,SV2C,SNAP91,FCHO2,ABCA13*
GO:0007507	heart development	0.009127653395611767	*ERBB4,SETD2,ALPK3,NRP1,SLC8A1,DNAH11,ADAMTS9,NIPBL,NEBL,EYA1,SLIT3,SPRED1,FGF12,TPM1,NOTCH2,GLI3,NTRK3,SGCG,FBN1,FHOD3,GREB1L,ROCK1,CACNA1C,MAPK1,PRKG1,EGFR,AKAP6,LARGE1,MED1,ABL1,JARID2,LRP2,SETDB2,RYR2,SOX6,SGCD,VCAM1,INSR,AKAP13,CPE,APC,SNAI2,DNAH5,PDLIM5,SMAD5,ALPK2,ASB2*
GO:0043412	macromolecule modification	0.010527459062602848	*ERBB4,KLHL13,RNF38,PAK1,PCMTD2,TRIO,SETD2,KIRREL1,AMBRA1,ALPK3,MYO3B,NRP1,FRY,RC3H1,RPS6KA5,TAOK3,HERC2,ABL2,PRKCB,SLC8A1,LYPLA1,MAN2A2,LNPEP,CDK12,GALNT13,NEK4,USP14,ST8SIA4,CNKSR3,TRI*

			M2,SLC8A3,MGAT5,USP24,SLCO3A1,PDZRN3, PIK3C3,DCLK1,CDC42BPA,NIPBL,MARCHF6,C CNG2,PJA2,ASB3,NEK6,MOB1B,HECW2,PEAK1 ,EYA1,KSR1,TTC3,TTLL7,ST8SIA1,FYN,CRE BBP,ZBTB16,PRMT8,B4GALT6,STK32A,OTUD7 A,TRABD2B,SPRED1,KANSL1,DPH6,NOTCH2,T OX,PDE4D,PTPRT,PRKACB,PTPN4,GXYLT2,HI PK3,TRIM9,WSB1,LAMA1,MAST4,NRXN1,NTRK 3,PRRC1,NEK10,PIAS1,ST6GALNAC3,PTAR1, GALNT10,HMGA2,HHAT,PARP8,ZDHHC17,PKN2 ,ROCK1,HERC1,UBR1,PRKAA2,PRKN,TRPM7,S IAH2,LATS2,PTPRD,CDC14B,PTPRN2,HDAC4, MYO3A,NTRK2,MAPK1,CUL5,PRKG1,BIRC6,DI P2B,NLK,SPOP,EGFR,PTPRQ,BCR,MAGI2,LAR GE1,FANCM,FUT9,GALNTL6,MOK,PDP2,RNF15 2,ZNRF3,GNAQ,ITPKB,GRM5,MED1,MTMR7,EP HA6,PID1,ABL1,PTPRG,PIGN,PCMTD1,PPM1L ,FER,PAK5,SETDB2,FBXL17,GALNT14,PRLR, MTMR2,FBXL7,FGF10,NOS1AP,CADM1,RC3H2, MSRA,STK32B,ZDHHC21,RAPGEF2,INSR,PDK1 ,KLF15,ARFGEF1,ENPP1,ULK2,PPM1F,EGLN3 ,GFRA1,BMPR1B,CPE,KITLG,MAP4K4,DOCK3, PRAME,APC,MARCHF1,RELN,MACROD2,EOGT,A UTS2,ROR1,PPP2R3A,MTMR3,BMP2K,NDFIP1, PTPN13,AKT3,ST8SIA6,PRKCA,KMT2C,USP8, ERC1,APP,RPS6KA3,SMAD5,ALPK2,ASB2,EYA 2,MAPK8IP1,ADGRB1,CCDC88A
GO:1902903	regulation of supramolecular fiber organization	0.0112084275334896	*PAK1,KIRREL1,NRP1,EPS8,ARHGEF7,CDC42E P3,CORO2B,SLC39A12,ARHGAP28,FMN1,SVIL ,TPM1,TMOD2,TJP1,FCHSD2,WASF3,FHOD3,R OCK1,PRKN,ABL1,FER,MTPN,PDE4DIP,AKAP1 3,ARFGEF1,RHPN2,PPM1F,SEMA5A,CTNNA2,A PC,CYFIP2,USP8,APP,CCDC88A*
GO:0048639	positive regulation of developmental growth	0.0116875477262689387	*ERBB4,MACF1,NRP1,SLC23A2,NIPBL,DISC1, RIMS1,SYT1,BBS2,ARHGAP32,PRKN,PLCB1,D SCAM,AKAP6,INSR,RIMS2,SEMA5A,ATP8A2,S LC6A3,GHRH*
GO:0043954	cellular component maintenance	0.01220990858632214	*KIRREL1,TANC1,FYN,GRIN2B,TJP1,ERC2,NR XN1,ADGRB3,NLGN1,MTMR2,SHANK2,INSR,ER C1*
GO:0007605	sensory perception of sound	0.0128541279967874673	*MYO3B,NIPBL,EYA1,ATP2B2,NAV2,PCDH15,T JP1,LRIG1,MYO3A,PTPRQ,LARGE1,TMPRSS3, LRP2,PPIP5K2,KCNQ3,LHFPL3,ADGRV1,ROR1 ,SNAI2,USH1C*
GO:0051093	negative regulation of developmental process	0.01476264 2765110969	*TRIO,EPN2,NRP1,RC3H1,CDK12,CNTN4,LDLR AD4,SEMA3A,LIMD1,ADAMTS9,PBX1,BICRAL, RORB,ASAP1,ANKRD26,ZBTB16,TAFA5,SPRED 1,CRIM1,SRGAP2C,GLI3,BRINP1,FBN1,ROCK 1,GLIS1,COL4A2,DNM3,BBS2,PRKN,RORA,RA NBP3L,HDAC4,ADGRB3,MAPK1,NFIB,DIP2B,E GFR,BCR,ITPKB,MED1,NLGN1,JARID2,SEMA6 D,NFATC2,FAT3,FGF10,SOX6,RC3H2,RAPGEF 2,ENPP1,ULK2,ZFHX3,SEMA5A,MAP4K4,PRAM E,ABCA5,ADGRV1,SNAI2,NDFIP1,TNR,PTPN1 3,APP,ALPK2,ADGRB1*

GO:003033 5	positive regulation of cell migration	0.01522940 1398676097	*PAK1,SYNE2,NRP1,CDH13,ABL2,ARHGEF7,SE MA3A,MGAT5,NIPBL,AGO2,SRGAP2C,TJP1,JC AD,DOCK4,NTRK3,ITGA4,DOCK1,ARHGAP32,M APK1,LAMB1,SDCBP,EGFR,ATP8A1,ABL1,JAM 2,SEMA6D,FER,MAPRE2,FGF10,RAPGEF2,INS R,PPM1F,SEMA5A,KITLG,MAP4K4,APC,RELN, SNAI2,AKT3,IL1R1,BCAS3,PRKCA,APP*
GO:006004 1	retina development in camera-type eye	0.01550834 3617645928	*PDE6A,NRP1,NFIA,DCLK1,RORB,ATP2B2,MEG F11,LAMA1,SCAPER,NTRK2,DSCAM,NFIB,LAR GE1,MED1,FAT3,BMPR1B,ATP8A2,CELF4,CRB 1,USH1C*
GO:006053 7	muscle tissue development	0.01619853 1115462052	*ERBB4,ALPK3,SLC8A1,RBFOX1,ADAMTS9,NEB L,ITGA8,EYA1,SVIL,TPM1,COL19A1,NOTCH2 ,FLNB,SGCG,FHOD3,HDAC4,PRKG1,AKAP6,LA RGE1,MED1,ABL1,JARID2,LRP2,RYR2,MTPN, SOX6,SGCD,AKAP13,PGM5,DNER,MRTFB,PDLI M5,SMAD5,ALPK2,ASB2,EYA2*
GO:004867 5	axon extension	0.01757014 0188901066	*MACF1,NRP1,SEMA3A,ALCAM,DCLK1,DISC1,S LIT3,ARHGAP32,DSCAM,DIP2B,ABL1,SEMA6D ,VCL,ULK2,SEMA5A,AUTS2,TNR*
GO:011005 3	regulation of actin filament organization	0.01775189 8405774718	*PAK1,KIRREL1,NRP1,EPS8,CDC42EP3,CORO2 B,ARHGAP28,FMN1,SVIL,TPM1,TMOD2,TJP1, FCHSD2,WASF3,FHOD3,ROCK1,PRKN,ABL1,FE R,MTPN,ARFGEF1,RHPN2,PPM1F,SEMA5A,CTN NA2,CYFIP2,CCDC88A*
GO:004592 7	positive regulation of growth	0.01833528 5903596222	*ERBB4,MACF1,NRP1,TEAD1,SLC23A2,NIPBL, DISC1,RIMS1,SYT1,BBS2,ARHGAP32,PRKN,P LCB1,SDCBP,DSCAM,EGFR,AKAP6,MTPN,INSR ,RIMS2,PPM1F,SEMA5A,ATP8A2,RPS6KA3,SL C6A3,GHRH*
GO:005104 9	regulation of transport	0.01845497 9452577968	*SLMAP,KCNMA1,SETD2,NRP1,CDH13,ABL2,PR KCB,ARHGEF7,UTRN,SLC8A1,LYPLA1,HTR2C, KCNC1,DYSF,CACNA1E,SIAH3,TBC1D5,CNKSR 3,RFX3,NKAIN3,TTC21B,CLTCL1,SV2B,HECW 2,FYN,NALCN,SLC1A2,CADPS,RGS7,GRIN2B, FGF12,CACNG2,BTBD9,CLDN10,PDE4D,ERC2, RIMS1,GLI3,NRXN1,FRMD4A,RAPGEF4,DPP6, CACNA2D3,ABCC9,GSG1L,ROCK1,CACNA1C,DN M3,SYT1,GRB10,PRKN,PTPRN2,PLCB1,MAPK1 ,SDCBP,ATP9A,PRKG1,PPFIA2,STXBP6,BCR, MAGI2,AKAP6,ANKFY1,TBC1D1,SCN2A,CNTN1 ,GRM5,AIMP1,ATP8A1,PID1,NLGN1,ABL1,FE R,RYR2,CACNB2,STXBP4,MTMR2,KCNH5,FGF1 0,NOS1AP,INSR,WDR41,KLF15,ENPP1,RIMS2 ,PPM1F,KCNQ3,SCN8A,KCND2,ATP8A2,SV2C, MAP4K4,CNIH3,ABCA5,RELN,KCNJ15,BMP2K, NDFIP1,SNAP91,KCNS3,APP,DNAJC13,ABCA1 3,GHRH,RAP1GDS1*
GO:005109 4	positive regulation of developmen tal process	0.02028928 1469967474	*ERBB4,MACF1,AMBRA1,NRP1,PRKCB,SLC23A2 ,ARHGEF7,SLC8A1,HTR2C,STAU2,RFX3,ATP1 1C,ADAMTS9,NIPBL,CLSTN2,TCF12,ADGRL2, TCF4,BICRAL,SLC39A12,DISC1,AGO2,ZBTB1 6,SPEN,NOTCH2,TOX,TJP1,RIMS1,LAMA1,JC AD,GLI3,BRINP1,NRXN1,ARID1B,PIAS1,HMG A2,SYT1,BBS2,ARHGAP32,PRKN,DPF3,PTPRD ,RANBP3L,ADGRB3,NTRK2,PLCB1,LAMB1,SDC BP,SOX5,DSCAM,NELL1,AKAP6,ITPKB,GRM5, MED1,SPIRE1,NLGN1,ABL1,GRID2,LRP2,NFA*

			TC2,VSTM2A,FGF10,SOX6,RAPGEF2,INSR,RIMS2,ZFHX3,BMPR1B,SEMA5A,ATP8A2,KITLG,ADGRV1,RELN,SNAI2,AKT3,PRKCA,MRTFB,RPS6KA3,SMAD5,SLC6A3,ADGRB1,GHRH
GO:0046328	regulation of JNK cascade	0.021254190288257792	*TAOK3,ANKRD6,SEMA3A,GRIK2,PJA2,EDAR,HIPK3,PHLPP1,PRKN,PLCB1,SDCBP,EGFR,NCOR1,ZMYND11,MAPKBP1,MAP4K4,APP,MAPK8IP1*
GO:0007169	transmembrane receptor protein tyrosine kinase signaling pathway	0.02191360970493484	*ERBB4,PAK1,EPN2,NRP1,CDH13,PRKCB,ARHGEF7,SAMD12,MBD5,KIF16B,ANKS1B,FYN,CRIM1,PTPRT,JCAD,NRXN1,NTRK3,MYO1E,ZDHHC17,COL4A2,GRB10,NTRK2,PLCB1,MAPK1,CUL5,EGFR,ARHGEF28,EPHA6,NRG3,PID1,ABL1,PTPRG,ERBIN,FER,PRLR,STXBP4,FGF10,CADM1,ZNF106,RAPGEF2,INSR,ENPP1,GFRA1,ROR1,CYFIP2,CCDC88A,GHRH*
GO:0071840	cellular component organization or biogenesis	0.022218669055758488	*HPSE2,ERBB4,KCNMA1,APBB2,MACF1,PAK1,CTNND2,FRMD3,SCAF8,COL22A1,ATP9B,TRIO,MITF,RTN1,SETD2,KIRREL1,AMBRA1,CHD9,SYNE2,DOP1B,MYO3B,NRP1,TEAD1,NFIA,FRY,CDH13,RC3H1,RPS6KA5,EPS8,TANGO2,TAOK3,LRFN5,ABL2,PRKCB,SLC23A2,ARHGEF7,PHACTR3,EML1,PRR16,RERG,KCNC1,DYSF,STAU2,SIAH3,FYCO1,CNTN4,TBC1D5,EXOC6B,AFG3L2,FRMD5,SEMA3A,PLIN2,SLC8A3,RFX3,STARD13,MMP16,LRRC4C,ALCAM,ATP11C,PDZRN3,LIMD1,PIK3C3,DCLK1,ADAMTS9,CDC42BPA,NIPBL,CEP120,CDC42EP3,CHD6,HMCN1,FGD4,MYO5C,SDC2,NCAM1,CLSTN2,KDM4B,ADGRL2,TANC1,CORO2B,NEBL,ITGA8,SYCP1,VPS41,MYO10,TCF4,TOM1L2,FAM171A1,ATP10A,PHACTR1,BICRAL,TTC21B,NEK6,ABCD2,SLC39A12,COG2,ARHGAP28,DISC1,HECW2,RIC3,FMN1,PEAK1,EYA1,SVIL,ASAP1,TTLL7,LYST,FRMPD4,COL23A1,PLEKHA3,FYN,SH3KBP1,AGO2,CREBBP,SLC1A2,PRMT8,CSMD3,LRBA,B4GALT6,SLIT3,SGTB,GRIN2B,ANTXR1,SRGAP2,ARSB,GRIA1,TRABD2B,NEGR1,MYO5A,NAV2,DGKB,CACNG2,TSPAN33,KANSL1,BTBD9,TPM1,COL19A1,NOTCH2,FLNB,TOX,CLDN10,PCDH15,ESR1,NFAT5,SRGAP2C,TMOD2,TJP1,ARHGAP26,ERC2,PTPRT,PRKACB,RIMS1,WSB1,FCHSD2,PARVB,LAMA1,GLI3,GOLGA8S,MAST4,NRXN1,SUPT16H,NTRK3,WASF3,LONP2,ARID1B,HYDIN,TRAPPC10,TSPAN2,WDPCP,MAGI1,CNKSR2,ANKRD31,PIAS1,CDH20,PRELID2,HMGA2,CTTNBP2,FHOD3,GRID1,RERE,ATL1,MYO1E,ZDHHC17,PKN2,ITGA4,HFM1,GSG1L,ROCK1,HERC1,CFAP70,DOCK1,PRKAA2,ARHGEF11,CCSER2,COL4A2,DNM3,SYT1,BBS2,ARHGAP32,PRKN,DPF3,TRPM7,SIAH2,EXOC4,SACS,PTPRD,CDC14B,BBS9,TLN2,HDAC4,ADGRB3,DGKG,MYO9A,MYO3A,NTRK2,PLCB1,MAPK1,LAMB1,SDCBP,ATP9A,BPTF,TASOR2,PRKG1,DSCAM,NFIB,DIP2B,NBEA,EGFR,PPFIA2,STXBP6,NCAM2,BCR,MAGI2,AKAP6,LARGE1,TRAPPC8,RTTN,STX12,FANCM,ARHGEF28,MELTF,FUT9,ANKFY1,IQCJ-SCHIP1,SLC12A1,CNTN1,DOCK10,TENM3,GRM*

			5,MED1,GNPTAB,EPHA6,SPIRE1,PHACTR2,LDB2,COL14A1,WDR72,SNX30,NRG3,ATP8A1,PID1,NLGN1,ABL1,PTPRG,NCOR1,JARID2,MICAL3,GRID2,ELMO1,LRP2,ERBIN,SEMA6D,CABIN1,KHDC4,SMOC1,FER,PAK5,SETDB2,PRLR,NFATC2,DST,FAT3,CACNB2,NTNG1,MED15,MTPN,MTMR2,LRP12,MAPRE2,FGF10,KIF13A,NOS1AP,PDE4DIP,MPDZ,YLPM1,TRPM3,VCL,SEZ6L,XKR6,RAPGEF2,CDH7,IFT81,SHANK2,ZMYND11,INSR,AKAP13,IMMP2L,SYNJ1,CHCHD6,UNC5D,KDM1B,GABRG2,ARFGEF1,FAT1,PATJ,ENPP1,ULK2,UNC13C,ZNF462,NRXN3,RIMS2,RHPN2,PPM1F,KCNQ3,PGM5,GFRA1,BMPR1B,NSG1,KCND2,SEMA5A,ATP8A2,GOLGA8T,PYGO1,ARHGAP24,MAP4K4,CTNNA2,APC,APLF,PARD3B,DNER,ABCA5,ADGRV1,RELN,AKAP11,VPS13C,AUTS2,ROR1,MTMR3,BMP2K,SNAI2,CYFIP2,ADAMTSL1,TNR,PTPN13,SNAP91,OCA2,CELF4,AKT3,CRB1,VAV3,BCAS3,FCHO2,PRKCA,KMT2C,USP8,USH1C,DNAH5,CNTN6,KCNS3,FMN2,ERC1,APP,PDLIM5,RPS6KA3,BTAF1,DNAJC13,NYAP2,VPS13B,ABCA13,ASB2,EYA2,ADGRB1,CCDC88A,RAP1GDS1,SPOCK1
GO:0065009	regulation of molecular function	0.022765501809730165	*SLMAP,ERBB4,PAK1,AMBRA1,NETO2,NRP1,RPS6KA5,TAOK3,ABL2,PRKCB,ARHGEF7,UTRN,SLC8A1,CDK12,KCNC1,TBC1D5,USP14,CNKSR3,SLC8A3,MGAT5,SLCO3A1,FGD4,RGL1,SIPA1L2,CCNG2,EVI5,TAFA4,PBX1,ARHGAP28,DISC1,HECW2,RALGPS1,ARHGAP42,KSR1,ASAP1,SGSM1,FYN,PRMT8,DLGAP1,RGS7,GRIN2B,ANTXR1,SRGAP2,SPRED1,FGF12,CACNG2,GARNL3,TPM1,NOTCH2,ESR1,PDE4D,PTPRT,HIPK3,TMEM225,GLI3,NRXN1,NTRK3,BCL2L13,PRRC1,RAPGEF4,NEK10,HMGA2,ITGA4,ABCC9,GSG1L,ROCK1,CACNA1C,PRKN,SIAH2,LATS2,DOCK9,CDC14B,HDAC4,MYO9A,NTRK2,MAPK1,PRKG1,BIRC6,DGKI,EGFR,BCR,MAGI2,AKAP6,LARGE1,PLCL1,TBC1D1,PDP2,GNAQ,DOCK10,GRM5,ARAP2,LDB2,NLGN1,ABL1,EBF2,ERBIN,MBTPS2,FER,RYR2,PRLR,CACNB2,MTPN,GNG7,MAPRE2,FGF10,NOS1AP,ZDHHC21,RAPGEF2,RAPGEF5,INSR,WDR41,ARFGEF1,ENPP1,ZNF462,PPM1F,EGLN3,DLGAP2,KITLG,ARHGAP24,MAP4K4,CNIH3,DOCK3,APC,ADGRV1,RELN,ANXA4,TBC1D9,ROR1,CYFIP2,NDFIP1,VAV3,BCAS3,ERC1,APP,RPS6KA3,BTAF1,MAPK8IP1,CCDC88A,RAP1GDS1,SPOCK1*
GO:0048738	cardiac muscle tissue development	0.023580419252188973	*ERBB4,ALPK3,SLC8A1,ADAMTS9,NEBL,TPM1,NOTCH2,SGCG,FHOD3,PRKG1,AKAP6,LARGE1,MED1,ABL1,JARID2,LRP2,RYR2,SOX6,SGCD,AKAP13,PDLIM5,SMAD5,ALPK2,ASB2*
GO:0090066	regulation of anatomical structure size	0.0235970708589902	*KCNMA1,MACF1,KIRREL1,MYO3B,NRP1,EPS8,SLC8A1,PRR16,SEMA3A,CDC42EP3,ARHGAP28,DISC1,FMN1,ARHGAP42,SVIL,TMOD2,FCHSD2,DOCK4,FHOD3,ROCK1,BBS2,ARHGAP32,MYO3A,PRKG1,DSCAM,DIP2B,SLC12A1,ABL1,SEMA6D,FER,MTPN,ZDHHC21,ARFGEF1,ULK2,SEM*

			A5A,CYFIP2,TNR,AKT3,VAV3,USH1C,RAP1GD S1
GO:003253 5	regulation of cellular component size	0.02433494 8947814336	KCNMA1,MACF1,KIRREL1,MYO3B,NRP1,EPS8, PRR16,SEMA3A,CDC42EP3,ARHGAP28,DISC1, FMN1,SVIL,TMOD2,FCHSD2,FHOD3,ARHGAP32 ,MYO3A,DSCAM,DIP2B,SLC12A1,ABL1,SEMA6 D,FER,MTPN,ARFGEF1,ULK2,SEMA5A,CYFIP2 ,TNR,AKT3,VAV3,USH1C
GO:007084 8	response to growth factor	0.02454773 1939276916	FSTL1,ERBB4,EPN2,NRP1,NFIA,PRKCB,KCNC 1,LDLRAD4,SNX25,KIF16B,ITGA8,FYN,CREB BP,GRIA1,SPRED1,CRIM1,NOTCH2,JCAD,NRX N1,NTRK3,FBN1,WWOX,ZDHHC17,ROCK1,COL4 A2,GRB10,LATS2,NTRK2,MAPK1,SDCBP,BPTF ,SOX5,NLK,EGFR,MAGI2,MED1,ABL1,LRP2,F ER,VSTM2A,FGF10,SOX6,VCAM1,RAPGEF2,IN SR,ZFHX3,GFRA1,BMPR1B,SNAI2,CYFIP2,US P8,SMAD5
GO:005196 6	regulation of synaptic transmissio n, glutamaterg ic	0.02572782 9936113365	GRIK2,DISC1,GRIN2B,CACNG2,NRXN1,SYT1, GRIK1,DGKI,GRM5,NLGN1,GRIK3,RELN,TNR
GO:009706 1	dendritic spine organization	0.02572782 9936113365	CTNND2,STAU2,TANC1,FYN,GRIN2B,DNM3,PP FIA2,DOCK10,NLGN1,MTMR2,INSR,RELN,PDL IM5
GO:015011 5	cell- substrate junction organization	0.02589149 5247336777	MACF1,NRP1,ARHGEF7,CORO2B,FMN1,PEAK1, WDPCP,ROCK1,BCR,ABL1,DST,MAPRE2,VCL,P PM1F,MAP4K4
GO:000693 6	muscle contraction	0.02594960 5813370358	SLMAP,KCNMA1,APBB2,UTRN,SLC8A1,SLC8A3 ,ASB3,ARHGAP42,FGF12,TPM1,TMOD2,PDE4D ,DOCK4,ABCC9,ROCK1,CACNA1C,ARHGEF11,B BS2,PPP1R12B,HDAC4,PRKG1,LARGE1,RYR2, CACNB2,NOS1AP,SGCD,ZDHHC21,ATP8A2,DTN A,SMAD5,RAP1GDS1
GO:004269 2	muscle cell differentiati on	0.02603100 9345831597	ALPK3,SLC8A1,AFG3L2,MYEF2,TANC1,NEBL, ITGA8,TPM1,TMOD2,LAMA1,PIAS1,FHOD3,DO CK1,RORA,HDAC4,ADGRB3,LAMB1,PRKG1,AKA P6,LARGE1,JAM2,NFATC2,MTPN,FGF10,SOX6 ,SGCD,AKAP13,PGM5,DNER,MRTFB,PDLIM5,A LPK2,ASB2,ADGRB1
GO:002260 4	regulation of cell morphogene sis	0.02880532 538557497	MACF1,EPS8,SLC23A2,ARHGEF7,STAU2,LIMD 1,CDC42EP3,FGD4,MYO10,FAM171A1,ATP10A ,FYN,SH3KBP1,TPM1,RIMS1,PARVB,WASF3,W DPCP,SYT1,PRKN,PTPRD,MYO9A,NTNG1,RIMS 2,RELN
GO:009950 5	regulation of presynaptic membrane potential	0.03375165 609955328	KCNC1,GRIK2,GRIK4,GABRB1,GRIN2B,GRIA1 ,GRIK3,GRIA4
GO:003003 1	cell projection	0.03408053 299448471	SYNE2,MYO3B,NRP1,CDH13,EPS8,ARHGEF7,S TAU2,RFX3,DCLK1,CEP120,CDC42EP3,FGD4, MYO10,TTC21B,DISC1,ASAP1,SRGAP2,PCDH1

	assembly		5,SRGAP2C,PARVB,NRXN1,WASF3,HYDIN,WDPCP,ROCK1,CFAP70,DNM3,BBS2,CDC14B,BBS9,MYO3A,SDCBP,NLGN1,ABL1,FER,VCL,RAPGEF2,IFT81,ARHGAP24,APC,AUTS2,CYFIP2,VAV3,DNAH5,CCDC88A
GO:0031032	actomyosin structure organization	0.03430513233978309	PAK1,FRMD3,NRP1,FRMD5,CDC42BPA,CORO2B,NEBL,FAM171A1,PHACTR1,ARHGAP28,TPM1,TMOD2,TJP1,FHOD3,ROCK1,TRPM7,ABL1,AKAP13,RHPN2,PPM1F,PGM5,CCDC88A
GO:0021537	telencephalon development	0.03687524943580345	ERBB4,SYNE2,KCNC1,SEMA3A,CEP120,PHACTR1,DISC1,SLC1A2,SRGAP2,GRIA1,SRGAP2C,ZSWIM6,GLI3,HERC1,BBS2,FOXP2,NTRK2,PLCB1,LAMB1,NFIB,EGFR,LARGE1,SCN2A,NRG3,RELN,TNR,DNAH5
GO:0006836	neurotransmitter transport	0.03708859196951116	SLC6A11,PRKCB,DYSF,SV2B,SLC1A2,CADPS,ERC2,RIMS1,NRXN1,SYN2,SYT1,PRKN,PTPRN2,DGKI,PPFIA2,NLGN1,SYNJ1,UNC13C,NRXN3,RIMS2,SV2C,SLC6A3
GO:0007160	cell-matrix adhesion	0.03928512400305017	MACF1,NRP1,CDH13,ARHGEF7,UTRN,ADAMTS9,CORO2B,ITGA8,DISC1,FMN1,PEAK1,WDPCP,ITGA4,ROCK1,TRPM7,PPFIA2,BCR,ABL1,VCL,VCAM1,ITGA9,PPM1F,FREM1,MAP4K4
GO:0071495	cellular response to endogenous stimulus	0.03975183505880648	FSTL1,ERBB4,PAK1,EPN2,NRP1,NFIA,PRKCB,SLC8A1,HTR2C,LDLRAD4,SNX25,MBD5,KIF16B,ITGA8,GABRB1,FYN,CREBBP,SLC1A2,SLIT3,GRIA1,SPRED1,MYO5A,CRIM1,NOTCH2,ESR1,PDE4D,GNG2,JCAD,ITPR2,NRXN1,NTRK3,FBN1,WWOX,ARID1B,ZDHHC17,ITGA4,ROCK1,UBR1,RXRG,PRKAA2,COL4A2,BBS2,GRB10,PRKN,LATS2,NTRK2,PLCB1,MAPK1,SDCBP,BPTF,SOX5,NLK,EGFR,MAGI2,AKAP6,LARGE1,GNAQ,GRM5,MED1,CPEB4,PID1,ABL1,NCOR1,LRP2,FER,RYR2,PRLR,STXBP4,VSTM2A,FGF10,SOX6,ZNF106,VCAM1,RAPGEF2,INSR,KLF15,DENND4C,GABRG2,ENPP1,GFRA1,BMPR1B,NSG1,SNAI2,CYFIP2,BCAS3,USP8,APP,SMAD5,RAP1GDS1
GO:0016049	cell growth	0.04064594541517787	MACF1,NRP1,TEAD1,SLC23A2,RERG,SEMA3A,ALCAM,DCLK1,SLC39A12,DISC1,SLIT3,RIMS1,ITGA4,ARHGEF11,SYT1,ARHGAP32,PRKN,SDCBP,PRKG1,DSCAM,DIP2B,EGFR,AKAP6,NRG3,ABL1,SEMA6D,PAK5,MTPN,VCL,ENPP1,ULK2,RIMS2,SEMA5A,AUTS2,CYFIP2,TNR,APP,PDLIM5,RPS6KA3,SPOCK1
GO:0040017	positive regulation of locomotion	0.04249313524049236	PAK1,SYNE2,NRP1,CDH13,ABL2,ARHGEF7,SEMA3A,MGAT5,NIPBL,AGO2,SRGAP2C,TJP1,JCAD,DOCK4,NTRK3,ITGA4,DOCK1,ARHGAP32,MAPK1,LAMB1,SDCBP,DSCAM,EGFR,ATP8A1,ABL1,JAM2,SEMA6D,FER,MAPRE2,FGF10,RAPGEF2,INSR,PPM1F,SEMA5A,KITLG,MAP4K4,APC,RELN,SNAI2,AKT3,IL1R1,BCAS3,PRKCA,APP
GO:0120031	plasma membrane bounded cell projection assembly	0.044330275348464274	SYNE2,MYO3B,NRP1,CDH13,EPS8,ARHGEF7,STAU2,RFX3,DCLK1,CEP120,CDC42EP3,FGD4,MYO10,TTC21B,DISC1,ASAP1,SRGAP2,PCDH15,SRGAP2C,PARVB,NRXN1,WASF3,HYDIN,WDPCP,ROCK1,CFAP70,DNM3,BBS2,CDC14B,BBS9,MYO3A,SDCBP,NLGN1,ABL1,FER,VCL,RAPGEF2,IFT81,ARHGAP24,APC,AUTS2,VAV3,DNAH

GO.ID	Description	padj	Genes
GO:200014 7	positive regulation of cell motility	0.04865537 477210208	*PAK1,SYNE2,NRP1,CDH13,ABL2,ARHGEF7,SE MA3A,MGAT5,NIPBL,AGO2,SRGAP2C,TJP1,JC AD,DOCK4,NTRK3,ITGA4,DOCK1,ARHGAP32,M APK1,LAMB1,SDCBP,EGFR,ATP8A1,ABL1,JAM 2,SEMA6D,FER,MAPRE2,FGF10,RAPGEF2,INS R,PPM1F,SEMA5A,KITLG,MAP4K4,APC,RELN, SNAI2,AKT3,IL1R1,BCAS3,PRKCA,APP*
GO:000704 4	cell-substrate junction assembly	0.04975114 634460492	*MACF1,NRP1,ARHGEF7,CORO2B,FMN1,PEAK1, WDPCP,ROCK1,BCR,ABL1,DST,VCL,PPM1F,MA P4K4*

Table S8. GO associations with biological processes associated with 158 rDNA-contacting genes that are associated with lincRNAs in K562-diff. cells. The search was performed using g:Profiler (https://biit.cs.ut.ee/gprofiler/gost). Related to Figure 2C.

GO.ID	Description	padj	Genes
GO:004 8699	generation of neurons	6.880667464910143e-11	*HCN1,AGBL4,DSCAML1,CECR2,NEDD4,TH RB,SH3GL3,ASTN2,BRINP3,TANC2,DPYS L5,PAK3,ZNF536,IL1RAPL1,PLXNA4,TA FA1,LYN,ELAVL4,TIAM2,NTF3,TBX20,F LRT2,RBFOX2,BRINP2,TMEM108,GRM7,P TPRM,KIRREL3,PCP4,STXBP1,ANK3,SH3 GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MIN AR1,LHX9*
GO:000 7399	nervous system development	7.166248343204405e-11	*TACC2,HCN1,AGBL4,DSCAML1,CECR2,NE DD4,THRB,SH3GL3,ASTN2,BRINP3,TANC 2,DPYSL5,ATXN3,PAK3,GABRA2,ZNF536 ,GRIN2A,SHC3,IL1RAPL1,FGF14,PLXNA 4,IGSF21,TAFA1,KDM7A,LYN,ELAVL4,T IAM2,LINGO2,SLC24A4,MTHFD1L,NTF3, TBX20,FLRT2,RBFOX2,BRINP2,TMEM108 ,GABRB3,GRM7,PTPRM,KIRREL3,PCP4,S TXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2, FEZ2,SLIT2,MINAR1,LHX9*
GO:004 8731	system development	8.794561953895423e-11	*CD44,TACC2,DMRT1,HCN1,AGBL4,DSCAM L1,CECR2,NEDD4,THRB,IL6R,PKHD1,ZF PM2,PDGFD,SH3GL3,ASTN2,BRINP3,TAN C2,DPYSL5,ATXN3,PAK3,GABRA2,ZNF53 6,GRIN2A,SHC3,IL1RAPL1,BMPER,FGF1 4,ANGPT1,RPS6KA2,PLXNA4,IGSF21,SM OC2,PPARA,TAFA1,KDM7A,LYN,ELAVL4, TIAM2,LINGO2,RASSF2,SLC24A4,MTHFD 1L,NTF3,TBX20,FLRT2,GAS2,RBFOX2,B RINP2,TMEM108,GABRB3,GRM7,PTPRM,K IRREL3,PCP4,STXBP1,ANK3,SH3GL2,DD R2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,KL HL3,LHX9*
GO:000 7275	multicellular organism development	2.6113594131417265e-10	*CD44,TACC2,DMRT1,HCN1,AGBL4,DSCAM L1,CECR2,NEDD4,THRB,IL6R,PKHD1,ZF PM2,PDGFD,SH3GL3,ASTN2,BRINP3,TAN C2,DPYSL5,ATXN3,PAK3,GABRA2,SPECC 1,ZNF536,GRIN2A,SHC3,IL1RAPL1,BMP ER,FGF14,ANGPT1,RPS6KA2,PLXNA4,IG SF21,SMOC2,PPARA,TAFA1,KDM7A,LYN, ELAVL4,MYSM1,TIAM2,LINGO2,RASSF2,*

			SLC24A4,MTHFD1L,NTF3,RNF111,CFTR,TBX20,FLRT2,GAS2,RBFOX2,BRINP2,TMEM108,GABRB3,GRM7,PTPRM,NEDD9,KIRREL3,PCP4,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,KLHL3,LHX9
GO:0030182	neuron differentiation	3.3358106204730936e-10	*HCN1,AGBL4,DSCAML1,CECR2,NEDD4,THRB,SH3GL3,BRINP3,TANC2,DPYSL5,PAK3,ZNF536,IL1RAPL1,PLXNA4,LYN,ELAVL4,TIAM2,NTF3,TBX20,FLRT2,RBFOX2,BRINP2,TMEM108,GRM7,PTPRM,KIRREL3,PCP4,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,LHX9*
GO:0022008	neurogenesis	1.2176342862607e-9	*HCN1,AGBL4,DSCAML1,CECR2,NEDD4,THRB,SH3GL3,ASTN2,BRINP3,TANC2,DPYSL5,PAK3,ZNF536,GRIN2A,IL1RAPL1,PLXNA4,TAFA1,LYN,ELAVL4,TIAM2,NTF3,TBX20,FLRT2,RBFOX2,BRINP2,TMEM108,GRM7,PTPRM,KIRREL3,PCP4,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,LHX9*
GO:0032990	cell part morphogenesis	4.483568904568718e-9	*CD44,DSCAML1,NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,NUBPL,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2,TMEM108,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DCC,HMCN2,FEZ2,SLIT2,LHX9*
GO:0000902	cell morphogenesis	8.017875646384687e-9	*CD44,DMRT1,DSCAML1,NEDD4,PKHD1,CDH8,CDH18,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,ELAVL4,TIAM2,NTF3,FLRT2,GAS2,RBFOX2,TMEM108,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DCC,HMCN2,FEZ2,SLIT2,LHX9*
GO:0120039	plasma membrane bounded cell projection morphogenesis	1.3889521241804676e-8	*CD44,DSCAML1,NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2,TMEM108,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DCC,HMCN2,FEZ2,SLIT2,LHX9*
GO:0048856	anatomical structure development	1.4006849545927393e-8	*CD44,TACC2,DMRT1,HCN1,AGBL4,DSCAML1,CECR2,NEDD4,THRB,IL6R,PKHD1,CDH8,ZFPM2,CDH18,DEUP1,PDGFD,SH3GL3,ASTN2,BRINP3,TANC2,DPYSL5,ATXN3,PAK3,GABRA2,SPECC1,PDE3A,ZNF536,GRIN2A,SHC3,IL1RAPL1,KRT6A,BMPER,FGF14,ANGPT1,RPS6KA2,PLXNA4,IGSF21,SMOC2,PPARA,TAFA1,KDM7A,LYN,NUBPL,ELAVL4,MYSM1,TIAM2,LINGO2,RASSF2,SLC24A4,MTHFD1L,NTF3,RNF111,CFTR,TBX20,FLRT2,GAS2,RBFOX2,BRINP2,TMEM108,GABRB3,GRM7,RASAL2,PTPRM,NEDD9,KIRREL3,PCP4,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,KLHL3,LHX9*
GO:0048858	cell projection morphogenesis	1.628928640202945e-8	*CD44,DSCAML1,NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2,TMEM108,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DCC,HMCN2,FEZ2,SLIT2,LHX9*

GO ID	Term	p-value	Genes
GO:0048666	neuron development	2.1761878538727378e-8	*HCN1,AGBL4,DSCAML1,CECR2,NEDD4,THRB,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,LYN,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2,TMEM108,GRM7,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,LHX9*
GO:0048812	neuron projection morphogenesis	5.684327755749413e-8	*DSCAML1,NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2,TMEM108,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DCC,HMCN2,FEZ2,SLIT2,LHX9*
GO:0032502	developmental process	5.777700108079656e-8	*CD44,TACC2,DMRT1,HCN1,LRMDA,AGBL4,DSCAML1,CECR2,NEDD4,THRB,IL6R,PKHD1,CDH8,ZFPM2,CDH18,DEUP1,PDGFD,SH3GL3,ASTN2,BRINP3,TANC2,DPYSL5,ATXN3,PAK3,GABRA2,SPECC1,PDE3A,ZNF536,MORC1,GRIN2A,SHC3,IL1RAPL1,KRT6A,BMPER,FGF14,ANGPT1,RPS6KA2,PLXNA4,IGSF21,TBATA,SMOC2,PPARA,TAFA1,KDM7A,LYN,NUBPL,ELAVL4,MYSM1,TIAM2,LINGO2,RASSF2,SLC24A4,MTHFD1L,NTF3,RNF111,CFTR,TBX20,FLRT2,GAS2,RBFOX2,BRINP2,TMEM108,GABRB3,GRM7,RASAL2,PTPRM,NEDD9,KIRREL3,PCP4,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,KLHL3,LHX9*
GO:0032989	cellular component morphogenesis	9.911093769042061e-8	*CD44,DSCAML1,NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,NUBPL,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2,TMEM108,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DCC,HMCN2,FEZ2,SLIT2,LHX9*
GO:0031175	neuron projection development	9.971556895982489e-8	*DSCAML1,CECR2,NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,LYN,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2,TMEM108,GRM7,PTPRM,KIRREL3,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,LHX9*
GO:0007154	cell communication	3.5069269057350927e-7	*CD44,RPTOR,DMRT1,MDFIC,HCN1,PTPRE,NEDD4,SH3GLB1,THRB,IL6R,PKHD1,CDH8,RSU1,AKAP10,PDGFD,HCRTR1,SH3GL3,DPYSL5,ATXN3,PAK3,GABRA2,PDE3A,ZNF536,SLC24A2,GRIN2A,PRKAG2,MCTP2,SHC3,IL1RAPL1,CTNNA3,BMPER,PDE1A,FGF14,ANGPT1,RPH3A,RPS6KA2,MVB12B,PLXNA4,SMOC2,XPR1,PRKCE,GRM3,OR4F15,PPARA,PIAS2,TAFA1,LYN,SH3BP5,TIAM2,TSHZ3,RASSF2,SLC24A4,NTF3,RNF111,CFTR,TBX20,FLRT2,GAS2,PDE10A,RBFOX2,ACER2,TMEM108,GABRB3,GRM7,RASAL2,PTPRM,NEDD9,MYRIP,PCP4,STXBP1,ADCY2,ANK3,SH3GL2,DDR2,DCC,FEZ2,SLIT2,MINAR1,MCTP1*
GO:0009653	anatomical structure morphogenesis	7.169724380881554e-7	*CD44,DMRT1,HCN1,DSCAML1,CECR2,NEDD4,THRB,PKHD1,CDH8,ZFPM2,CDH18,ASTN2,TANC2,DPYSL5,PAK3,IL1RAPL1,KRT6A,BMPER,ANGPT1,PLXNA4,SMOC2,PPARA,NUBPL,ELAVL4,TIAM2,SLC24A4,MTHFD1L,NTF3,CFTR,TBX20,FLRT2,GAS2,RBFOX2,TMEM108,PTPRM,KIRREL3,STXBP*

			1,ANK3,SH3GL2,DCC,HMCN2,FEZ2,SLIT 2,MINAR1,KLHL3,LHX9
GO:003 2501	multicellular organismal process	0.00000147897835427 69327	*CD44,RPTOR,TACC2,DMRT1,HCN1,AGBL4 ,DSCAML1,CECR2,SLC16A7,NEDD4,THRB ,IL6R,PKHD1,ZFPM2,PDGFD,HCRTR1,SH 3GL3,ASTN2,BRINP3,TANC2,DPYSL5,AT XN3,PAK3,GABRA2,SPECC1,PDE3A,ZNF5 36,MORC1,SLC24A2,GRIN2A,SHC3,IL1R APL1,CTNNA3,KRT6A,BMPER,FGF14,ANG PT1,RPS6KA2,PLXNA4,IGSF21,TBATA,S MOC2,PRKCE,OR4F15,PPARA,F13A1,TAF A1,KDM7A,LYN,ELAVL4,MYSM1,TIAM2,T SHZ3,LINGO2,RASSF2,SLC24A4,MTHFD1 L,NTF3,RNF111,CFTR,TBX20,FLRT2,GA S2,RBFOX2,BRINP2,TMEM108,GABRB3,G RM7,RASAL2,PTPRM,NEDD9,KIRREL3,PC P4,STXBP1,ANK3,SNTB1,SH3GL2,DDR2, DCC,HMCN2,FEZ2,SLIT2,MINAR1,FBXO3 2,KLHL3,LHX9*
GO:002 3052	signaling	0.00000391346250741 1225	*CD44,RPTOR,DMRT1,MDFIC,HCN1,PTPRE ,NEDD4,THRB,IL6R,PKHD1,CDH8,RSU1, AKAP10,PDGFD,HCRTR1,SH3GL3,DPYSL5 ,ATXN3,PAK3,GABRA2,PDE3A,ZNF536,S LC24A2,GRIN2A,PRKAG2,MCTP2,SHC3,I L1RAPL1,BMPER,PDE1A,FGF14,ANGPT1, RPH3A,RPS6KA2,MVB12B,PLXNA4,SMOC2 ,PRKCE,GRM3,OR4F15,PPARA,PIAS2,TA FA1,LYN,SH3BP5,TIAM2,TSHZ3,RASSF2 ,SLC24A4,NTF3,RNF111,CFTR,TBX20,F LRT2,GAS2,PDE10A,RBFOX2,ACER2,TME M108,GABRB3,GRM7,RASAL2,PTPRM,NED D9,MYRIP,PCP4,STXBP1,ADCY2,ANK3,S H3GL2,DDR2,DCC,FEZ2,SLIT2,MINAR1, MCTP1*
GO:004 8667	cell morphogenes is involved in neuron differentiatio n	0.00001498725449895 0216	*DSCAML1,NEDD4,TANC2,DPYSL5,PAK3,I L1RAPL1,PLXNA4,ELAVL4,TIAM2,FLRT2 ,RBFOX2,PTPRM,STXBP1,ANK3,DCC,HMC N2,FEZ2,SLIT2,LHX9*
GO:003 0030	cell projection organization	0.00001537357417165 4405	*CD44,DSCAML1,CECR2,NEDD4,PKHD1,DE UP1,TANC2,DPYSL5,PAK3,IL1RAPL1,PL XNA4,LYN,ELAVL4,TIAM2,NTF3,FLRT2, RBFOX2,TMEM108,GRM7,PTPRM,NEDD9,K IRREL3,STXBP1,ANK3,SH3GL2,DDR2,DC C,HMCN2,FEZ2,SLIT2,MINAR1,LHX9*
GO:012 0036	plasma membrane bounded cell projection organization	0.00003194571511988 5	*CD44,DSCAML1,CECR2,NEDD4,PKHD1,TA NC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,L YN,ELAVL4,TIAM2,NTF3,FLRT2,RBFOX2 ,TMEM108,GRM7,PTPRM,NEDD9,KIRREL3 ,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN 2,FEZ2,SLIT2,MINAR1,LHX9*
GO:005 0808	synapse organization	0.00003902312003719 0646	*NEDD4,CDH8,TANC2,PPFIBP1,PAK3,GAB RA2,IL1RAPL1,PLXNA4,IGSF21,LINGO2 ,FLRT2,TMEM108,GABRB3,NEDD9,KIRRE L3,ANK3,HMCN2*
GO:005	cellular	0.00003944616500834	*CD44,RPTOR,DMRT1,MDFIC,HCN1,TOP3A ,PTPRE,ARPP21,NEDD4,SH3GLB1,THRB,*

1716	response to stimulus	126	IL6R,PKHD1,RSU1,AKAP10,PDGFD,HCRTR1,SH3GL3,BRINP3,DPYSL5,ATXN3,PAK3,SEL1L2,GABRA2,PDE3A,ZNF536,SLC24A2,GRIN2A,PRKAG2,MCTP2,SHC3,IL1RAPL1,BMPER,PDE1A,FGF14,ANGPT1,RPS6KA2,MVB12B,PLXNA4,SMOC2,XPR1,PRKCE,GRM3,OR4F15,PPARA,PIAS2,TAFA1,LYN,ELAVL4,SH3BP5,TIAM2,RASSF2,SLC24A4,NTF3,RNF111,CFTR,TBX20,FLRT2,GAS2,PDE10A,RBFOX2,BRINP2,ACER2,TMEM108,GABRB3,GRM7,BACH1,RASAL2,PTPRM,NEDD9,PCP4,STXBP1,ADCY2,ANK3,SH3GL2,DDR2,FEZ2,SLIT2,MINAR1,FBXO32,MCTP1
GO:0030154	cell differentiation	0.000048687234603870954	DMRT1,HCN1,LRMDA,AGBL4,DSCAML1,CECR2,NEDD4,THRB,IL6R,PKHD1,ZFPM2,DEUP1,SH3GL3,ASTN2,BRINP3,TANC2,DPYSL5,PAK3,PDE3A,ZNF536,MORC1,GRIN2A,IL1RAPL1,KRT6A,ANGPT1,RPS6KA2,PLXNA4,TBATA,PPARA,TAFA1,LYN,ELAVL4,MYSM1,TIAM2,RASSF2,NTF3,CFTR,TBX20,FLRT2,RBFOX2,BRINP2,TMEM108,GRM7,PTPRM,NEDD9,KIRREL3,PCP4,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,LHX9
GO:0048869	cellular developmental process	0.00004910517599828307	DMRT1,HCN1,LRMDA,AGBL4,DSCAML1,CECR2,NEDD4,THRB,IL6R,PKHD1,ZFPM2,DEUP1,SH3GL3,ASTN2,BRINP3,TANC2,DPYSL5,PAK3,PDE3A,ZNF536,MORC1,GRIN2A,IL1RAPL1,KRT6A,ANGPT1,RPS6KA2,PLXNA4,TBATA,PPARA,TAFA1,LYN,ELAVL4,MYSM1,TIAM2,RASSF2,NTF3,CFTR,TBX20,FLRT2,RBFOX2,BRINP2,TMEM108,GRM7,PTPRM,NEDD9,KIRREL3,PCP4,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,LHX9
GO:0048468	cell development	0.00006166861586459082	DMRT1,HCN1,AGBL4,DSCAML1,CECR2,NEDD4,THRB,IL6R,PKHD1,TANC2,DPYSL5,PAK3,PDE3A,IL1RAPL1,ANGPT1,RPS6KA2,PLXNA4,PPARA,LYN,ELAVL4,MYSM1,TIAM2,RASSF2,NTF3,CFTR,TBX20,FLRT2,RBFOX2,TMEM108,GRM7,PTPRM,NEDD9,KIRREL3,STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2,FEZ2,SLIT2,MINAR1,LHX9
GO:0050896	response to stimulus	0.00007523312737468003	CD44,RPTOR,DMRT1,MDFIC,HCN1,TOP3A,PTPRE,ARPP21,AGBL4,TRIM43B,NEDD4,SH3GLB1,THRB,IL6R,PKHD1,CDH8,RSU1,AKAP10,PDGFD,HCRTR1,SH3GL3,BRINP3,DPYSL5,ATXN3,PAK3,PSIP1,SEL1L2,GABRA2,PDE3A,ZNF536,MORC1,SLC24A2,GRIN2A,PRKAG2,MCTP2,SHC3,IL1RAPL1,KRT6A,BMPER,PDE1A,FGF14,ANGPT1,RPS6KA2,MVB12B,PLXNA4,SMOC2,XPR1,PRKCE,GRM3,OR4F15,PPARA,F13A1,PIAS2,TAFA1,PRG4,LYN,ELAVL4,SH3BP5,TIAM2,RASSF2,SLC24A4,NTF3,RNF111,CFTR,TBX20,FLRT2,GAS2,PDE10A,RBFOX2,BRINP2,ACER2,TMEM108,GABRB3,GRM7,BACH1,RASAL2,PTPRM,NEDD9,PCP4,

			STXBP1,ADCY2,ANK3,SH3GL2,DDR2,HMC N2,FEZ2,SLIT2,MINAR1,FBXO32,BCKDH B,MCTP1
GO:000 8283	cell population proliferation	0.00007962494527429 469	CD44,RPTOR,TACC2,DMRT1,AGBL4,DSCA ML1,CECR2,NEDD4,IL6R,PKHD1,ZFPM2, DEUP1,PDGFD,TANC2,DPYSL5,PAK3,IL1 RAPL1,KRT6A,BMPER,PDE1A,ANGPT1,RP S6KA2,PLXNA4,TAFA1,LYN,ELAVL4,TIA M2,NTF3,TBX20,FLRT2,RBFOX2,ACER2, TMEM108,GRM7,PTPRM,NEDD9,KIRREL3, STXBP1,ANK3,SH3GL2,DDR2,DCC,HMCN2 ,FEZ2,SLIT2,MINAR1,LHX9
GO:006 5008	regulation of biological quality	0.00010317928471441 255	RPTOR,HCN1,SLC12A8,NEDD4,SH3GLB1, THRB,BACE2,CDH8,TANC2,PAK3,GABRA2 ,PDE3A,SLC24A2,GRIN2A,MCTP2,IL1RA PL1,CTNNA3,ANGPT1,RPH3A,RPS6KA2,P LXNA4,PRKCE,PPARA,F13A1,ANO4,LYN, ELAVL4,TSHZ3,LINGO2,RASSF2,SLC24A 4,CFTR,FLRT2,GAS2,TMEM108,GABRB3, NEDD9,MYRIP,STXBP1,ANK3,SH3GL2,DC C,SLIT2,MCTP1
GO:001 0646	regulation of cell communicati on	0.00016298194761245 295	CD44,RPTOR,DMRT1,MDFIC,HCN1,PTPRE ,NEDD4,THRB,IL6R,PKHD1,PDGFD,HCRT R1,PAK3,PDE3A,ZNF536,SLC24A2,GRIN 2A,MCTP2,BMPER,ANGPT1,MVB12B,SMOC 2,PRKCE,GRM3,PPARA,PIAS2,TAFA1,LY N,TIAM2,TSHZ3,RASSF2,SLC24A4,NTF3 ,RNF111,CFTR,TBX20,GAS2,PDE10A,TM EM108,GRM7,MYRIP,STXBP1,ANK3,DDR2 ,DCC,SLIT2,MINAR1,MCTP1
GO:009 9537	trans- synaptic signaling	0.00021108678487973 543	HCN1,CDH8,HCRTR1,ATXN3,GABRA2,SLC 24A2,GRIN2A,MCTP2,IL1RAPL1,RPH3A, RPS6KA2,PRKCE,GRM3,TSHZ3,TMEM108, GABRB3,GRM7,STXBP1,DCC,MCTP1
GO:005 0793	regulation of development al process	0.00022253528318741 118	CD44,DMRT1,AGBL4,NEDD4,IL6R,PKHD1 ,ZFPM2,SH3GL3,BRINP3,TANC2,DPYSL5 ,PAK3,PDE3A,ZNF536,IL1RAPL1,BMPER ,PLXNA4,SMOC2,PPARA,LYN,ELAVL4,MY SM1,TIAM2,LINGO2,RASSF2,NTF3,CFTR ,TBX20,FLRT2,GAS2,RBFOX2,BRINP2,P TPRM,NEDD9,PCP4,DDR2,DCC,SLIT2,MI NAR1
GO:009 9536	synaptic signaling	0.00035612790899991 8	HCN1,CDH8,HCRTR1,ATXN3,GABRA2,SLC 24A2,GRIN2A,MCTP2,IL1RAPL1,RPH3A, RPS6KA2,PRKCE,GRM3,TSHZ3,TMEM108, GABRB3,GRM7,STXBP1,DCC,MCTP1
GO:002 3051	regulation of signaling	0.00041652983468079 097	CD44,RPTOR,DMRT1,MDFIC,HCN1,PTPRE ,NEDD4,THRB,IL6R,PKHD1,PDGFD,HCRT R1,PAK3,PDE3A,ZNF536,SLC24A2,GRIN 2A,MCTP2,BMPER,ANGPT1,MVB12B,SMOC 2,PRKCE,GRM3,PPARA,PIAS2,TAFA1,LY N,TIAM2,TSHZ3,RASSF2,SLC24A4,NTF3 ,RNF111,CFTR,TBX20,GAS2,PDE10A,TM EM108,GRM7,MYRIP,STXBP1,DDR2,DCC, SLIT2,MINAR1,MCTP1
GO:007 1495	cellular response to endogenous	0.00046755108378503 11	CD44,RPTOR,HCN1,PTPRE,NEDD4,THRB, PDGFD,HCRTR1,PDE3A,BMPER,SMOC2,PR KCE,PPARA,PIAS2,LYN,ELAVL4,NTF3,R NF111,CFTR,TBX20,FLRT2,RBFOX2,TME

	stimulus		*M108,GABRB3,SH3GL2,DDR2,SLIT2,FBX O32*
GO:000 7165	signal transduction	0.00074105293260355 51	*CD44,RPTOR,DMRT1,MDFIC,PTPRE,NEDD 4,THRB,IL6R,PKHD1,RSU1,AKAP10,PDG FD,HCRTR1,SH3GL3,DPYSL5,PAK3,GABR A2,PDE3A,ZNF536,SLC24A2,GRIN2A,PR KAG2,MCTP2,SHC3,IL1RAPL1,BMPER,PD E1A,FGF14,ANGPT1,RPS6KA2,MVB12B,P LXNA4,SMOC2,PRKCE,GRM3,OR4F15,PPA RA,PIAS2,TAFA1,LYN,SH3BP5,TIAM2,R ASSF2,SLC24A4,NTF3,RNF111,TBX20,F LRT2,GAS2,PDE10A,RBFOX2,ACER2,TME M108,GABRB3,GRM7,RASAL2,PTPRM,NED D9,PCP4,ADCY2,ANK3,SH3GL2,DDR2,FE Z2,SLIT2,MINAR1,MCTP1*
GO:009 8916	anterograde trans- synaptic signaling	0.00086868606810730 8	*HCN1,CDH8,HCRTR1,ATXN3,GABRA2,SLC 24A2,GRIN2A,MCTP2,RPH3A,RPS6KA2,P RKCE,GRM3,TSHZ3,TMEM108,GABRB3,GR M7,STXBP1,DCC,MCTP1*
GO:000 7268	chemical synaptic transmission	0.00086868606810730 8	*HCN1,CDH8,HCRTR1,ATXN3,GABRA2,SLC 24A2,GRIN2A,MCTP2,RPH3A,RPS6KA2,P RKCE,GRM3,TSHZ3,TMEM108,GABRB3,GR M7,STXBP1,DCC,MCTP1*
GO:000 9719	response to endogenous stimulus	0.00093517596237521 88	*CD44,RPTOR,HCN1,PTPRE,NEDD4,THRB, PDGFD,HCRTR1,PDE3A,BMPER,SMOC2,PR KCE,PPARA,PIAS2,LYN,ELAVL4,SLC24A 4,NTF3,RNF111,CFTR,TBX20,FLRT2,RB FOX2,TMEM108,GABRB3,SH3GL2,DDR2,S LIT2,FBXO32,BCKDHB*
GO:003 4330	cell junction organization	0.00101980215529096 09	*NEDD4,PKHD1,CDH8,CDH18,TANC2,PPFI BP1,PAK3,GABRA2,IL1RAPL1,PLXNA4,I GSF21,LINGO2,FLRT2,TMEM108,GABRB3 ,NEDD9,KIRREL3,ANK3,HMCN2*
GO:006 1564	axon development	0.00253562017187023 43	*DSCAML1,DPYSL5,PAK3,PLXNA4,TIAM2, FLRT2,GRM7,PTPRM,STXBP1,ANK3,DCC, HMCN2,FEZ2,SLIT2,LHX9*
GO:000 7155	cell adhesion	0.00293021474132653 4	*CD44,DSCAML1,PKHD1,CDH8,RSU1,CDH1 8,ASTN2,PPFIBP1,ATXN3,IL1RAPL1,CT NNA3,ANGPT1,PLXNA4,IGSF21,PRKCE,P PARA,LYN,FLRT2,ACER2,PTPRM,NEDD9, KIRREL3,STXBP1,ANK3,DDR2,DCC,HMCN 2*
GO:000 7409	axonogenesis	0.00300813140634903 4	*DSCAML1,DPYSL5,PAK3,PLXNA4,TIAM2, FLRT2,PTPRM,STXBP1,ANK3,DCC,HMCN2 ,FEZ2,SLIT2,LHX9*
GO:000 7411	axon guidance	0.00794972624238169	*DSCAML1,DPYSL5,PLXNA4,FLRT2,PTPRM ,DCC,HMCN2,FEZ2,SLIT2,LHX9*
GO:009 7485	neuron projection guidance	0.00794972624238169	*DSCAML1,DPYSL5,PLXNA4,FLRT2,PTPRM ,DCC,HMCN2,FEZ2,SLIT2,LHX9*
GO:004 3116	negative regulation of vascular permeability	0.01134987578246833 4	*PDE3A,ANGPT1,SH3GL2,SLIT2*
GO:000	behavior	0.01167259459059331	*RPTOR,HCN1,THRB,HCRTR1,ATXN3,SPEC C1,MORC1,SLC24A2,GRIN2A,PRKCE,PPA*

7610		2	*RA,ELAVL4,SLC24A4,NTF3,NEDD9,KIRREL3*
GO:0035249	synaptic transmission, glutamatergic	0.013962552721893772	*HCN1,CDH8,GRIN2A,GRM3,TSHZ3,GRM7,STXBP1*
GO:0010975	regulation of neuron projection development	0.015936400707484706	*NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,LYN,ELAVL4,TIAM2,DDR2,DCC,SLIT2,MINAR1*
GO:0071363	cellular response to growth factor stimulus	0.019347785759461767	*CD44,NEDD4,PDGFD,PDE3A,BMPER,SMOC2,PPARA,ELAVL4,NTF3,RNF111,TBX20,FLRT2,TMEM108,SH3GL2,DDR2,SLIT2*
GO:0051966	regulation of synaptic transmission, glutamatergic	0.024256774300206545	*HCN1,GRIN2A,GRM3,TSHZ3,GRM7,STXBP1*
GO:0007167	enzyme-linked receptor protein signaling pathway	0.03278898761584116	*DMRT1,PTPRE,NEDD4,PDGFD,PAK3,SHC3,BMPER,ANGPT1,MVB12B,SMOC2,PPARA,LYN,NTF3,RNF111,TBX20,FLRT2,TMEM108,NEDD9,DDR2*
GO:0070848	response to growth factor	0.03290789318317691	*CD44,NEDD4,PDGFD,PDE3A,BMPER,SMOC2,PPARA,ELAVL4,NTF3,RNF111,TBX20,FLRT2,TMEM108,SH3GL2,DDR2,SLIT2*
GO:0120035	regulation of plasma membrane bounded cell projection organization	0.03940890045022272	*CD44,NEDD4,TANC2,DPYSL5,PAK3,IL1RAPL1,PLXNA4,LYN,ELAVL4,TIAM2,NEDD9,DDR2,DCC,SLIT2,MINAR1*
GO:0018108	peptidyl-tyrosine phosphorylation	0.043728441098152285	*CD44,IL6R,PDGFD,ANGPT1,PRKCE,LYN,SH3BP5,NTF3,NEDD9,DDR2*
GO:0018212	peptidyl-tyrosine modification	0.04634724530064585	*CD44,IL6R,PDGFD,ANGPT1,PRKCE,LYN,SH3BP5,NTF3,NEDD9,DDR2*
CC			
GO:0045202	synapse	4.362099333251276e-10	*HCN1,DSCAML1,SLC16A7,NEDD4,CDH8,HCRTR1,SH3GL3,TANC2,PPFIBP1,ATXN3,PAK3,GABRA2,GRIN2A,MCTP2,IL1RAPL1,RPH3A,RPS6KA2,PLXNA4,IGSF21,PRKCE,GRM3,LYN,ELAVL4,TIAM2,NTF3,FLRT2,TMEM108,GABRB3,GRM7,KIRREL3,MYRIP,STXBP1,ANK3,SNTB1,SH3GL2,DCC,MCTP1*
GO:0030054	cell junction	2.289624393977403e-9	*CD44,HCN1,DSCAML1,SLC16A7,NEDD4,CDH8,RSU1,CDH18,HCRTR1,SH3GL3,TANC2,PPFIBP1,ATXN3,PAK3,GABRA2,GRIN2*

			A,MCTP2,IL1RAPL1,CTNNA3,RPH3A,RPS 6KA2,PLXNA4,IGSF21,PRKCE,GRM3,LYN ,ELAVL4,TIAM2,NTF3,FLRT2,TMEM108, GABRB3,GRM7,PTPRM,NEDD9,KIRREL3,M YRIP,STXBP1,ANK3,SNTB1,SH3GL2,DDR 2,DCC,HMCN2,MCTP1
GO:004 3005	neuron projection	9.305621446365178e-7	*RPTOR,HCN1,AGBL4,DSCAML1,NEDD4,CD H8,BRINP3,TANC2,DPYSL5,GABRA2,GRI N2A,IL1RAPL1,RPH3A,GRM3,ELAVL4,TI AM2,TSHZ3,SLC24A4,FLRT2,BRINP2,TM EM108,GRM7,KIRREL3,MYRIP,STXBP1,A DCY2,ANK3,DCC,HMCN2,FEZ2*
GO:003 6477	somatodendri tic compartment	0.00000489097192558 6654	*RPTOR,HCN1,NEDD4,ASTN2,BRINP3,TAN C2,DPYSL5,GABRA2,GRIN2A,IL1RAPL1, PDE1A,RPH3A,GRM3,ELAVL4,TIAM2,PDE 10A,BRINP2,TMEM108,GRM7,KIRREL3,A DCY2,ANK3,HMCN2*
GO:009 8794	postsynapse	0.00000510605592706 3768	*HCN1,SLC16A7,NEDD4,SH3GL3,TANC2,P AK3,GABRA2,GRIN2A,IL1RAPL1,RPH3A, IGSF21,GRM3,LYN,ELAVL4,TMEM108,GA BRB3,GRM7,STXBP1,ANK3,DCC*
GO:012 0025	plasma membrane bounded cell projection	0.00001784809402311 3083	*CD44,RPTOR,HCN1,AGBL4,DSCAML1,NED D4,PKHD1,CDH8,BRINP3,TANC2,DPYSL5 ,GABRA2,GRIN2A,IL1RAPL1,CTNNA3,AN GPT1,RPH3A,TBATA,GRM3,ELAVL4,TIAM 2,TSHZ3,SLC24A4,FLRT2,BRINP2,TMEM 108,GRM7,PTPRM,NEDD9,KIRREL3,MYRI P,STXBP1,ADCY2,ANK3,DCC,HMCN2,FEZ 2,FBXL13*
GO:004 2995	cell projection	0.00002105789586600 6035	*CD44,RPTOR,HCN1,AGBL4,DSCAML1,NED D4,PKHD1,CDH8,BRINP3,TANC2,DPYSL5 ,GABRA2,GRIN2A,IL1RAPL1,CTNNA3,AN GPT1,RPH3A,TBATA,GRM3,ELAVL4,TIAM 2,TSHZ3,SLC24A4,FLRT2,BRINP2,TMEM 108,GRM7,PTPRM,NEDD9,KIRREL3,MYRI P,STXBP1,ADCY2,ANK3,SH3GL2,DCC,HM CN2,FEZ2,FBXL13*
GO:003 0424	axon	0.00002522913756797 758	*HCN1,AGBL4,DSCAML1,CDH8,TANC2,GAB RA2,IL1RAPL1,GRM3,ELAVL4,TIAM2,TS HZ3,TMEM108,GRM7,KIRREL3,STXBP1,A NK3,DCC,HMCN2,FEZ2*
GO:003 0425	dendrite	0.00007985591179037 648	*RPTOR,HCN1,NEDD4,BRINP3,TANC2,DPY SL5,GABRA2,GRIN2A,IL1RAPL1,RPH3A, GRM3,ELAVL4,BRINP2,TMEM108,GRM7,K IRREL3,ADCY2,ANK3*
GO:009 7447	dendritic tree	0.00008371897098233 28	*RPTOR,HCN1,NEDD4,BRINP3,TANC2,DPY SL5,GABRA2,GRIN2A,IL1RAPL1,RPH3A, GRM3,ELAVL4,BRINP2,TMEM108,GRM7,K IRREL3,ADCY2,ANK3*
GO:004 5211	postsynaptic membrane	0.00013576923782073 5	*HCN1,SLC16A7,GABRA2,GRIN2A,IL1RAP L1,RPH3A,IGSF21,GRM3,GABRB3,GRM7, ANK3,DCC*
GO:009 7060	synaptic membrane	0.00016752457297704 618	*HCN1,SLC16A7,CDH8,GABRA2,GRIN2A,I L1RAPL1,RPH3A,IGSF21,GRM3,GABRB3, GRM7,STXBP1,ANK3,DCC*
GO:009 8793	presynapse	0.00048729193991789 52	*HCN1,CDH8,SH3GL3,PPFIBP1,GABRA2,G RIN2A,MCTP2,RPH3A,IGSF21,GRM3,NTF 3,GRM7,KIRREL3,STXBP1,SH3GL2,MCTP 1*

GO:0098978	glutamatergic synapse	0.0024541127354646445	HCN1,SLC16A7,CDH8,SH3GL3,PAK3,GRIN2A,IL1RAPL1,PLXNA4,GRM3,LYN,ELAVL4,STXBP1,SH3GL2
GO:0098590	plasma membrane region	0.0079685324017524377	CD44,HCN1,SLC16A7,NEDD4,IL6R,PKHD1,CDH8,GABRA2,GRIN2A,IL1RAPL1,RPH3A,IGSF21,GRM3,SLC24A4,CFTR,GABRB3,GRM7,NEDD9,STXBP1,ANK3,DDR2,DCC,HMCN2
GO:0071944	cell periphery	0.0250518146495021556	CD44,TACC2,MDFIC,HCN1,PTPRE,DSCAML1,SLC16A7,NEDD4,BACE2,IL6R,PKHD1,CDH8,CDH18,AKAP10,SPOCK3,HCRTR1,ASTN2,PPFIBP1,ATXN3,PAK3,GABRA2,SLC24A2,COL25A1,GRIN2A,SHC3,IL1RAPL1,BMPER,ANGPT1,RPH3A,MVB12B,PLXNA4,IGSF21,SMOC2,XPR1,PRKCE,GRM3,OR4F15,F13A1,ANO4,PRG4,LYN,NUBPL,TSHZ3,LINGO2,RASSF2,SLC24A4,CFTR,FLRT2,GABRB3,GRM7,NKAIN2,PTPRM,NEDD9,KIRREL3,MYRIP,STXBP1,ADCY2,ANK3,SNTB1,SH3GL2,DDR2,DCC,HMCN2,MINAR1
GO:0016020	membrane	0.0269075480663229237	ST8SIA5,CD44,RPTOR,TACC2,MDFIC,HCN1,PTPRE,SLC12A8,DSCAML1,SLC16A7,NEDD4,SH3GLB1,BACE2,IL6R,PKHD1,CDH8,METTL15,RNF182,TMEM132C,CDH18,AKAP10,DEUP1,GALNT17,PDGFD,HCRTR1,SH3GL3,ASTN2,PPFIBP1,ATXN3,PAK3,SEL1L2,GABRA2,SPECC1,PDE3A,SLC24A2,COL25A1,GRIN2A,PCNX2,PRKAG2,MCTP2,SHC3,IL1RAPL1,KRT6A,ANGPT1,RPH3A,MVB12B,PLXNA4,IGSF21,XPR1,PRKCE,GRM3,OR4F15,ANO4,LYN,NUBPL,SH3BP5,TIAM2,TSHZ3,LINGO2,RASSF2,OSBPL1A,SLC24A4,MTHFD1L,CFTR,FLRT2,GAS2,ACER2,TMEM108,GABRB3,GRM7,NKAIN2,PTPRM,NEDD9,KIRREL3,STXBP1,ADCY2,ANK3,TMEM232,TMEM132B,SNTB1,SH3GL2,DDR2,DCC,TMEM132D,HMCN2,SLIT2,MINAR1,ARSJ,DPY19L1,MCTP1
GO:0005737	cytoplasm	0.04318589025221875	ST8SIA5,CD44,RPTOR,TACC2,DMRT1,MDFIC,TOP3A,PTPRE,ARPP21,AGBL4,TRIM43B,SLC16A7,NEDD4,SH3GLB1,DPYD,BACE2,PKHD1,CCDC18,METTL15,RSU1,MAP3K7CL,RNF182,ZFPM2,AKAP10,DEUP1,GALNT17,PDGFD,SH3GL3,ASTN2,BRINP3,DPYSL5,PPFIBP1,ATXN3,PAK3,PSIP1,SEL1L2,GABRA2,SPECC1,PDE3A,COL25A1,GRIN2A,PRKAG2,MCTP2,SHC3,IL1RAPL1,TXNDC16,CTNNA3,KRT6A,PDE1A,FGF14,RPH3A,RPS6KA2,MVB12B,TBATA,XPR1,PRKCE,MTUS2,F13A1,TAFA1,LYN,NUBPL,ELAVL4,MYSM1,SH3BP5,TIAM2,RASSF2,OSBPL1A,SLC24A4,MTHFD1L,NTF3,RNF111,CFTR,TBX20,FLRT2,GAS2,PDE10A,RBFOX2,BRINP2,ACER2,TMEM108,GABRB3,GRM7,BACH1,RASAL2,PTPRM,NEDD9,KIRREL3,MYRIP,PCP4,STXBP1,ADCY2,ANK3,SNTB1,SH3GL2,DCC,HMCN2,FEZ2,SLIT2,FBXO32,KLHL3,FBXL13,ADARB2,A

			RSJ,BCKDHB,MCTP1

Table S9. GO associations with biological processes associated with 374 rDNA-contacting genes that are associated with lincRNAs in initial K562 cells. The search was performed using g:Profiler (https://biit.cs.ut.ee/gprofiler/gost). Related to Figure 2D.

GO.ID	Description	padj	Genes
GO:0043167	ion binding	2.447976807298887e-7	ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,MPPED2,KMT2E,MYO9B,PACSIN2,SEC23B,ZEB1,FAT4,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SYT10,ZBTB38,ZNF648,USP49,MYO5B,ZZEF1,ZFAND4,KDM5A,ZNF382,ITGA1,ITSN2,EPHA4,TTLL11,DIDO1,ADAMTS2,PRKAA1,ABCC4,MYT1,ASH1L,ZC3HAV1,RAB38,ZNF891,ADAMTS19,RAB27B,MORC3,NSD1,PLS1,ABCC12,DSTYK,LPCAT2,ZNF518A,PHC2,DCAF1,KALRN,ZNF124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZFP90,S100B,LTN1,KLF12,DIRAS2,KCNAB1,CDHR3,ITGB8,PRUNE2,POR,CDH11,AIF1L,ZNF780B,PNPLA8,LMX1A,ZNF292,ZNF611,EPHB1,TRIM58,ZMYM1,UBE2QL1,FER1L6,ZNF33B,HLCS,STK10,FLT1,ADSS2,PDE2A,ATP6V1B2,KCNJ1,NCS1,TRPC5,AMFR,PLCB4,LOXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,CMPK1,BAZ2A,DDX6,PLEKHB2,PRKD1,PLCZ1,SNRK,ZFYVE26,DHX29,ZNF606,ESYT2,ZNF804B,MLLT10,CSNK1G1,ABCA4,PLEKHA2,ZMYM4,DEPTOR,VCAN,DDHD1,MATN2,CRACR2A,ZNF615,PHF20L1,ZNF431,IARS2,CELSR2,TET1,LMX1B,RRAGD,ZMAT4,MARCHF8,CLIP1,ZNF613,TLL1,PRDM15,UBE3A,TYW1,AGAP1,ZNF112,HTR2A,TPH2,GALNT1,CHN1,GATAD2B,TRPS1,INO80,RANBP2,ADCY9,ANO6,ERCC6L2,RUFY2,SUSD1,HIPK1,ACSM2B,HSPA12A,PEPD,AGO3,CNOT6L,ZNHIT6,ACTR3C
GO:0036094	small molecule binding	5.008752864240382e-7	ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,MPPED2,KMT2E,MYO9B,PACSIN2,SEC23B,ZEB1,FAT4,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SYT10,ZBTB38,ZNF648,USP49,KL,MYO5B,ZZEF1,ZFAND4,KDM5A,ZNF382,ITGA1,ITSN2,EPHA4,TTLL11,DIDO1,ADAMTS2,PRKAA1,ABCC4,MYT1,ASH1L,ZC3HAV1,RAB38,ZNF891,ADAMTS19,RAB27B,MORC3,NSD1,PLS1,ABCC12,DSTYK,LPCAT2,ZNF518A,PHC2,DCAF1,KALRN,ZNF124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZFP90,S100B,LTN1,KLF12,TINAG,DIRAS2,KCNAB1,CDHR3,ITGB8,PRUNE2,POR,CDH11,AIF1L,ZNF780B,PNPLA8,LMX1A,ZNF292,ZNF611,EPHB1,TRIM58,ZMYM1,UBE2QL1,FER1L6,ZNF33B,HLCS,STK10,FLT1,ADSS2,PDE2A,CBLIF,ATP6V1B2,KCNJ1,NCS1,TRPC5,AMFR,PLCB4,LOXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,CMPK1,BAZ2A,DDX6,PLEKH

			B2,PRKD1,PLCZ1,SNRK,ZFYVE26,DHX29, ZNF606,ESYT2,ZNF804B,MLLT10,CSNK1G 1,ABCA4,PLEKHA2,ZMYM4,DEPTOR,VCAN, DDHD1,MATN2,CRACR2A,ZNF615,PHF20L1 ,ZNF431,IARS2,CELSR2,TET1,LMX1B,RR AGD,ZMAT4,MARCHF8,CLIP1,ZNF613,TLL 1,PRDM15,UBE3A,TYW1,AGAP1,ZNF112,H TR2A,TPH2,GALNT1,CHN1,GATAD2B,TRPS 1,INO80,RANBP2,ADCY9,ANO6,ERCC6L2, RUFY2,SUSD1,HIPK1,ACSM2B,HSPA12A,P EPD,AGO3,CNOT6L,ZNHIT6,ACTR3C
GO:0046872	metal ion binding	5.676660044394 386e-7	ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,M PPED2,KMT2E,MYO9B,SEC23B,ZEB1,FAT4 ,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SY T10,ZBTB38,ZNF648,USP49,ZZEF1,ZFAN D4,KDM5A,ZNF382,ITGA1,ITSN2,TTLL11 ,DIDO1,ADAMTS2,PRKAA1,MYT1,ASH1L,Z C3HAV1,ZNF891,ADAMTS19,MORC3,NSD1, PLS1,LPCAT2,ZNF518A,PHC2,KALRN,ZNF 124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZF P90,S100B,LTN1,KLF12,CDHR3,ITGB8,P RUNE2,CDH11,AIF1L,ZNF780B,LMX1A,ZN F292,ZNF611,TRIM58,ZMYM1,FER1L6,ZN F33B,ADSS2,PDE2A,NCS1,AMFR,PLCB4,L OXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1 ,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,B AZ2A,PRKD1,PLCZ1,SNRK,ZFYVE26,ZNF6 06,ESYT2,ZNF804B,MLLT10,ZMYM4,VCAN ,DDHD1,MATN2,CRACR2A,ZNF615,PHF20L 1,ZNF431,CELSR2,TET1,LMX1B,ZMAT4,M ARCHF8,CLIP1,ZNF613,TLL1,PRDM15,UB E3A,TYW1,AGAP1,ZNF112,TPH2,GALNT1, CHN1,GATAD2B,TRPS1,RANBP2,ADCY9,AN O6,RUFY2,SUSD1,ACSM2B,PEPD,AGO3,CN OT6L,ZNHIT6
GO:0043169	cation binding	0.000001047943 246191549	ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,M PPED2,KMT2E,MYO9B,SEC23B,ZEB1,FAT4 ,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SY T10,ZBTB38,ZNF648,USP49,ZZEF1,ZFAN D4,KDM5A,ZNF382,ITGA1,ITSN2,TTLL11 ,DIDO1,ADAMTS2,PRKAA1,MYT1,ASH1L,Z C3HAV1,ZNF891,ADAMTS19,MORC3,NSD1, PLS1,LPCAT2,ZNF518A,PHC2,KALRN,ZNF 124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZF P90,S100B,LTN1,KLF12,CDHR3,ITGB8,P RUNE2,CDH11,AIF1L,ZNF780B,LMX1A,ZN F292,ZNF611,TRIM58,ZMYM1,FER1L6,ZN F33B,ADSS2,PDE2A,NCS1,AMFR,PLCB4,L OXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1 ,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,B AZ2A,PRKD1,PLCZ1,SNRK,ZFYVE26,ZNF6 06,ESYT2,ZNF804B,MLLT10,ZMYM4,VCAN ,DDHD1,MATN2,CRACR2A,ZNF615,PHF20L 1,ZNF431,CELSR2,TET1,LMX1B,ZMAT4,M ARCHF8,CLIP1,ZNF613,TLL1,PRDM15,UB E3A,TYW1,AGAP1,ZNF112,HTR2A,TPH2,G ALNT1,CHN1,GATAD2B,TRPS1,RANBP2,AD CY9,ANO6,RUFY2,SUSD1,ACSM2B,PEPD,A GO3,CNOT6L,ZNHIT6

| GO:0043167 | ion binding | 2.447976807298887e-7 | ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,MPPED2,KMT2E,MYO9B,PACSIN2,SEC23B,ZEB1,FAT4,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SYT10,ZBTB38,ZNF648,USP49,MYO5B,ZZEF1,ZFAND4,KDM5A,ZNF382,ITGA1,ITSN2,EPHA4,TTLL11,DIDO1,ADAMTS2,PRKAA1,ABCC4,MYT1,ASH1L,ZC3HAV1,RAB38,ZNF891,ADAMTS19,RAB27B,MORC3,NSD1,PLS1,ABCC12,DSTYK,LPCAT2,ZNF518A,PHC2,DCAF1,KALRN,ZNF124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZFP90,S100B,LTN1,KLF12,DIRAS2,KCNAB1,CDHR3,ITGB8,PRUNE2,POR,CDH11,AIF1L,ZNF780B,PNPLA8,LMX1A,ZNF292,ZNF611,EPHB1,TRIM58,ZMYM1,UBE2QL1,FER1L6,ZNF33B,HLCS,STK10,FLT1,ADSS2,PDE2A,ATP6V1B2,KCNJ1,NCS1,TRPC5,AMFR,PLCB4,LOXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,CMPK1,BAZ2A,DDX6,PLEKHB2,PRKD1,PLCZ1,SNRK,ZFYVE26,DHX29,ZNF606,ESYT2,ZNF804B,MLLT10,CSNK1G1,ABCA4,PLEKHA2,ZMYM4,DEPTOR,VCAN,DDHD1,MATN2,CRACR2A,ZNF615,PHF20L1,ZNF431,IARS2,CELSR2,TET1,LMX1B,RRAGD,ZMAT4,MARCHF8,CLIP1,ZNF613,TLL1,PRDM15,UBE3A,TYW1,AGAP1,ZNF112,HTR2A,TPH2,GALNT1,CHN1,GATAD2B,TRPS1,INO80,RANBP2,ADCY9,ANO6,ERCC6L2,RUFY2,SUSD1,HIPK1,ACSM2B,HSPA12A,PEPD,AGO3,CNOT6L,ZNHIT6,ACTR3C |
| GO:0036094 | small molecule binding | 5.008752864240382e-7 | ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,MPPED2,KMT2E,MYO9B,PACSIN2,SEC23B,ZEB1,FAT4,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SYT10,ZBTB38,ZNF648,USP49,KL,MYO5B,ZZEF1,ZFAND4,KDM5A,ZNF382,ITGA1,ITSN2,EPHA4,TTLL11,DIDO1,ADAMTS2,PRKAA1,ABCC4,MYT1,ASH1L,ZC3HAV1,RAB38,ZNF891,ADAMTS19,RAB27B,MORC3,NSD1,PLS1,ABCC12,DSTYK,LPCAT2,ZNF518A,PHC2,DCAF1,KALRN,ZNF124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZFP90,S100B,LTN1,KLF12,TINAG,DIRAS2,KCNAB1,CDHR3,ITGB8,PRUNE2,POR,CDH11,AIF1L,ZNF780B,PNPLA8,LMX1A,ZNF292,ZNF611,EPHB1,TRIM58,ZMYM1,UBE2QL1,FER1L6,ZNF33B,HLCS,STK10,FLT1,ADSS2,PDE2A,CBLIF,ATP6V1B2,KCNJ1,NCS1,TRPC5,AMFR,PLCB4,LOXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,CMPK1,BAZ2A,DDX6,PLEKHB2,PRKD1,PLCZ1,SNRK,ZFYVE26,DHX29,ZNF606,ESYT2,ZNF804B,MLLT10,CSNK1G1,ABCA4,PLEKHA2,ZMYM4,DEPTOR,VCAN,DDHD1,MATN2,CRACR2A,ZNF615,PHF20L1,ZNF431,IARS2,CELSR2,TET1,LMX1B,RRAGD,ZMAT4,MARCHF8,CLIP1,ZNF613,TLL1,PRDM15,UBE3A,TYW1,AGAP1,ZNF112,HTR2A,TPH2,GALNT1,CHN1,GATAD2B,TRPS |

			1,INO80,RANBP2,ADCY9,ANO6,ERCC6L2,RUFY2,SUSD1,HIPK1,ACSM2B,HSPA12A,PEPD,AGO3,CNOT6L,ZNHIT6,ACTR3C
GO:0046872	metal ion binding	5.676660044394386e-7	ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,MPPED2,KMT2E,MYO9B,SEC23B,ZEB1,FAT4,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SYT10,ZBTB38,ZNF648,USP49,ZZEF1,ZFAND4,KDM5A,ZNF382,ITGA1,ITSN2,TTLL11,DIDO1,ADAMTS2,PRKAA1,MYT1,ASH1L,ZC3HAV1,ZNF891,ADAMTS19,MORC3,NSD1,PLS1,LPCAT2,ZNF518A,PHC2,KALRN,ZNF124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZFP90,S100B,LTN1,KLF12,CDHR3,ITGB8,PRUNE2,CDH11,AIF1L,ZNF780B,LMX1A,ZNF292,ZNF611,TRIM58,ZMYM1,FER1L6,ZNF33B,ADSS2,PDE2A,NCS1,AMFR,PLCB4,LOXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,BAZ2A,PRKD1,PLCZ1,SNRK,ZFYVE26,ZNF606,ESYT2,ZNF804B,MLLT10,ZMYM4,VCAN,DDHD1,MATN2,CRACR2A,ZNF615,PHF20L1,ZNF431,CELSR2,TET1,LMX1B,ZMAT4,MARCHF8,CLIP1,ZNF613,TLL1,PRDM15,UBE3A,TYW1,AGAP1,ZNF112,TPH2,GALNT1,CHN1,GATAD2B,TRPS1,RANBP2,ADCY9,ANO6,RUFY2,SUSD1,ACSM2B,PEPD,AGO3,CNOT6L,ZNHIT6
GO:0043169	cation binding	0.000001047943246191549	ZHX3,HIVEP1,ATRX,ADAMTS18,SEC24D,MPPED2,KMT2E,MYO9B,SEC23B,ZEB1,FAT4,PARN,TRIM23,ZFYVE1,ROCK2,ACACA,SYT10,ZBTB38,ZNF648,USP49,ZZEF1,ZFAND4,KDM5A,ZNF382,ITGA1,ITSN2,TTLL11,DIDO1,ADAMTS2,PRKAA1,MYT1,ASH1L,ZC3HAV1,ZNF891,ADAMTS19,MORC3,NSD1,PLS1,LPCAT2,ZNF518A,PHC2,KALRN,ZNF124,KIAA0753,TNKS,SMPDL3A,IMPA2,ZFP90,S100B,LTN1,KLF12,CDHR3,ITGB8,PRUNE2,CDH11,AIF1L,ZNF780B,LMX1A,ZNF292,ZNF611,TRIM58,ZMYM1,FER1L6,ZNF33B,ADSS2,PDE2A,NCS1,AMFR,PLCB4,LOXL2,FTO,SLC6A1,CDH9,ADAM28,CYP4Z1,ACSM2A,NIN,SLC1A1,HPCAL1,LIMCH1,BAZ2A,PRKD1,PLCZ1,SNRK,ZFYVE26,ZNF606,ESYT2,ZNF804B,MLLT10,ZMYM4,VCAN,DDHD1,MATN2,CRACR2A,ZNF615,PHF20L1,ZNF431,CELSR2,TET1,LMX1B,ZMAT4,MARCHF8,CLIP1,ZNF613,TLL1,PRDM15,UBE3A,TYW1,AGAP1,ZNF112,HTR2A,TPH2,GALNT1,CHN1,GATAD2B,TRPS1,RANBP2,ADCY9,ANO6,RUFY2,SUSD1,ACSM2B,PEPD,AGO3,CNOT6L,ZNHIT6
BP			
GO:0065007	biological regulation	0.00195200699746543	MAP4,PKNOX2,ZHX3,HIVEP1,ATRX,OR1L6,NBN,PRTG,ADAMTS18,KMT2E,PELI2,MYO9B,PACSIN2,ZEB1,FAT4,PARN,SLC15A2,TRIM23,FBXW8,DIP2A,SFPQ,HOOK3,GPR137B,ROCK2,C1QL3,POU1F1,TSPAN13,YTHDF3,SYT10,ZBTB38,PAFAH1B1,GON4L,ZNF648,ARFGEF3,BCL2,KL,MYO5B,PPP1R9A

			,RAP1GAP,SPOPL,INO80D,KDM5A,NRIP1, ZNF382,ITGA1,ITSN2,HIRA,UFL1,EPHA4 ,DIDO1,COL4A3,PRKAA1,RASGEF1C,PBLD ,ABCC4,MYT1,ASH1L,SORBS2,PIK3R3,ME GF10,OPA3,ZC3HAV1,TMEM25,RAB38,ZNF 891,VMP1,RALGAPA2,VSTM4,RAB27B,CTS B,MORC3,NDRG2,NSD1,NEDD4L,PLS1,HDG FL3,ANK2,DSTYK,XRCC4,BZW1,FBXL20,Z NF518A,PHC2,DCAF1,NSG2,CD2AP,RGS8, KALRN,ZNF124,BMP7,ANKRD17,TNKS,OR2 T2,IMPA2,SCAI,ZFP90,S100B,ARHGAP12 ,KLF12,DIRAS2,FLI1,ANAPC1,KCNAB1,C DHR3,ITGB8,POR,CDH11,SETBP1,ZNF780 B,RBPMS2,ATP6V1E1,PNPLA8,LMX1A,KHD RBS2,VPS13D,ZNF292,KPNA1,FUT8,ADCY AP1R1,LAMC1,ZNF611,SRP9,EPHB1,MYOC D,TRIM58,PLPPR5,FER1L6,ZNF33B,PTCD 2,STK10,GAPVD1,INTS7,SOGA1,FLT1,RB 1CC1,NPHP4,FOXJ3,PDE2A,IL17RD,ATP6 V1B2,KCNJ1,NCS1,TRPC5,AMFR,PLCB4,L OXL2,FTO,SLC6A1,EPC2,FGF9,TRAPPC11 ,NIN,SLC1A1,RAB3GAP2,LIMCH1,CRACD, BAZ2A,MEOX2,DDX6,TRPM1,CACNG3,PLEK HB2,COPS8,AKAP9,PRKD1,PLCZ1,RBM47, SHROOM3,MSI2,ETS1,SYNE1,RALGPS2,SN RK,HRH1,RABEP1,TOGARAM1,ALKAL2,PLP PR1,MAP2,TGFA,ZFYVE26,DHX29,PTPRA, NUMB,TNRC6C,CELF2,CD70,TM9SF2,ZNF6 06,CAPN5,MLLT10,CSNK1G1,ABCA4,ZMYM 4,DEPTOR,VCAN,ATAT1,RBMS3,DDHD1,IC A1,RGS6,CRACR2A,ZNF615,ATP6V0D2,PH F20L1,ZNF431,IARS2,CELSR2,PTPRJ,TE T1,RALGAPA1,LMX1B,RRAGD,SHLD2,CLIP 1,SHC4,ELP2,ZNF613,UST,PRDM15,UBE3 A,HSF5,ADAM22,ZNF112,HTR2A,NCOA7,C HN1,GATAD2B,TRPS1,INO80,RANBP2,STR N,EIPR1,CHCHD2,CLDN18,ADCY9,GEMIN5 ,ANO6,RUFY2,OR4K2,HIPK1,KCNE4,PEPD ,BRWD1,AGO3,CNOT6L,MEF2C,TRAPPC6B, MYB,SLC39A6
GO:0050789	regulation of biological process	0.003483739098 752321	*MAP4,PKNOX2,ZHX3,HIVEP1,ATRX,OR1L6 ,NBN,PRTG,ADAMTS18,KMT2E,PELI2,MYO 9B,PACSIN2,ZEB1,FAT4,PARN,SLC15A2, TRIM23,FBXW8,DIP2A,SFPQ,HOOK3,GPR1 37B,ROCK2,C1QL3,POU1F1,TSPAN13,YTH DF3,SYT10,ZBTB38,PAFAH1B1,GON4L,ZN F648,ARFGEF3,BCL2,KL,PPP1R9A,RAP1G AP,SPOPL,INO80D,KDM5A,NRIP1,ZNF382 ,ITGA1,ITSN2,HIRA,UFL1,EPHA4,DIDO1 ,COL4A3,PRKAA1,RASGEF1C,PBLD,ABCC4 ,MYT1,ASH1L,SORBS2,PIK3R3,MEGF10,O PA3,ZC3HAV1,TMEM25,RAB38,ZNF891,VM P1,RALGAPA2,RAB27B,CTSB,MORC3,NDRG 2,NSD1,NEDD4L,PLS1,HDGFL3,ANK2,DST YK,BZW1,FBXL20,ZNF518A,PHC2,DCAF1, NSG2,CD2AP,RGS8,KALRN,ZNF124,BMP7, ANKRD17,TNKS,OR2T2,IMPA2,SCAI,ZFP9 0,S100B,ARHGAP12,KLF12,DIRAS2,FLI1 ,ANAPC1,KCNAB1,CDHR3,ITGB8,CDH11,S*

			ETBP1,ZNF780B,RBPMS2,ATP6V1E1,PNPLA8,LMX1A,KHDRBS2,VPS13D,ZNF292,KPNA1,FUT8,ADCYAP1R1,LAMC1,ZNF611,SRP9,EPHB1,MYOCD,TRIM58,PLPPR5,FER1L6,ZNF33B,PTCD2,STK10,GAPVD1,INTS7,SOGA1,FLT1,RB1CC1,NPHP4,FOXJ3,PDE2A,IL17RD,ATP6V1B2,KCNJ1,NCS1,TRPC5,AMFR,PLCB4,LOXL2,FTO,SLC6A1,EPC2,FGF9,NIN,SLC1A1,RAB3GAP2,LIMCH1,CRACD,BAZ2A,MEOX2,DDX6,TRPM1,CACNG3,PLEKHB2,COPS8,AKAP9,PRKD1,PLCZ1,RBM47,SHROOM3,MSI2,ETS1,SYNE1,RALGPS2,SNRK,HRH1,RABEP1,TOGARAM1,ALKAL2,PLPPR1,MAP2,TGFA,ZFYVE26,DHX29,PTPRA,NUMB,TNRC6C,CELF2,CD70,TM9SF2,ZNF606,CAPN5,MLLT10,CSNK1G1,ABCA4,ZMYM4,DEPTOR,VCAN,ATAT1,RBMS3,DDHD1,ICA1,RGS6,CRACR2A,ZNF615,ATP6V0D2,PHF20L1,ZNF431,CELSR2,PTPRJ,TET1,RALGAPA1,LMX1B,RRAGD,SHLD2,CLIP1,SHC4,ELP2,ZNF613,UST,PRDM15,UBE3A,HSF5,ADAM22,ZNF112,HTR2A,NCOA7,CHN1,GATAD2B,TRPS1,INO80,RANBP2,STRN,EIPR1,CHCHD2,CLDN18,ADCY9,GEMIN5,ANO6,RUFY2,OR4K2,HIPK1,KCNE4,PEPD,BRWD1,AGO3,CNOT6L,MEF2C,MYB,SLC39A6
GO:0031175	neuron projection development	0.004079893129277976	*MAP4,PRTG,FAT4,FBXW8,DIP2A,PAFAH1B1,BCL2,PPP1R9A,ITGA1,ITSN2,EPHA4,FRYL,NEDD4L,PLS1,HDGFL3,POTEJ,KALRN,BMP7,S100B,CDH11,LMX1A,EPHB1,PLPPR5,NCS1,TRPC5,NIN,PRKD1,SYNE1,ALKAL2,MAP2,NUMB,MATN2,CELSR2,UST,UBE3A,CHN1,STRN,MEF2C*
GO:0050794	regulation of cellular process	0.004632931329085173	*MAP4,PKNOX2,ZHX3,HIVEP1,ATRX,OR1L6,NBN,PRTG,ADAMTS18,KMT2E,PELI2,MYO9B,PACSIN2,ZEB1,FAT4,PARN,SLC15A2,TRIM23,FBXW8,DIP2A,SFPQ,HOOK3,GPR137B,ROCK2,C1QL3,POU1F1,TSPAN13,YTHDF3,SYT10,ZBTB38,PAFAH1B1,GON4L,ZNF648,ARFGEF3,BCL2,KL,PPP1R9A,RAP1GAP,INO80D,KDM5A,NRIP1,ZNF382,ITGA1,ITSN2,HIRA,UFL1,EPHA4,DIDO1,COL4A3,PRKAA1,RASGEF1C,PBLD,MYT1,ASH1L,SORBS2,PIK3R3,MEGF10,ZC3HAV1,TMEM25,RAB38,ZNF891,VMP1,RALGAPA2,RAB27B,CTSB,MORC3,NDRG2,NSD1,NEDD4L,PLS1,HDGFL3,ANK2,DSTYK,BZW1,FBXL20,ZNF518A,PHC2,DCAF1,NSG2,CD2AP,RGS8,KALRN,ZNF124,BMP7,ANKRD17,TNKS,OR2T2,IMPA2,SCAI,ZFP90,S100B,ARHGAP12,KLF12,DIRAS2,FLI1,ANAPC1,KCNAB1,ITGB8,CDH11,SETBP1,ZNF780B,RBPMS2,ATP6V1E1,PNPLA8,LMX1A,KHDRBS2,VPS13D,ZNF292,KPNA1,FUT8,ADCYAP1R1,LAMC1,ZNF611,SRP9,EPHB1,MYOCD,TRIM58,PLPPR5,FER1L6,ZNF33B,PTCD2,STK10,GAPVD1,INTS7,SOGA1,FLT1,RB1CC1,NPHP4,FOXJ3,PDE2A,IL17RD,ATP6V1B2,KCNJ1,NCS1,TRPC5,AMFR,PLCB4,LOXL2,FTO,SL*

			C6A1,EPC2,FGF9,NIN,SLC1A1,RAB3GAP2,LIMCH1,CRACD,BAZ2A,MEOX2,DDX6,TRPM1,CACNG3,PLEKHB2,COPS8,AKAP9,PRKD1,PLCZ1,RBM47,MSI2,ETS1,SYNE1,RALGPS2,SNRK,HRH1,RABEP1,TOGARAM1,ALKAL2,PLPPR1,MAP2,TGFA,ZFYVE26,DHX29,PTPRA,NUMB,TNRC6C,CELF2,CD70,TM9SF2,ZNF606,CAPN5,MLLT10,CSNK1G1,ABCA4,DEPTOR,VCAN,ATAT1,RBMS3,DDHD1,RGS6,CRACR2A,ZNF615,ATP6V0D2,PHF20L1,ZNF431,CELSR2,PTPRJ,TET1,RALGAPA1,LMX1B,RRAGD,SHLD2,CLIP1,SHC4,ELP2,ZNF613,UST,PRDM15,UBE3A,HSF5,ADAM22,ZNF112,HTR2A,NCOA7,CHN1,GATAD2B,TRPS1,INO80,STRN,EIPR1,CHCHD2,CLDN18,ADCY9,GEMIN5,ANO6,RUFY2,OR4K2,HIPK1,PEPD,BRWD1,AGO3,CNOT6L,MEF2C,MYB,SLC39A6
GO:0016358	dendrite development	0.00479205667545515	FBXW8,DIP2A,PAFAH1B1,EPHA4,NEDD4L,KALRN,BMP7,EPHB1,TRPC5,SYNE1,MAP2,MATN2,CELSR2,UBE3A,STRN,MEF2C
GO:0032502	developmental process	0.005141066767646673	MAP4,ZHX3,ATRX,NBN,PRTG,ADAMTS18,SEC24D,KMT2E,MYO9B,PACSIN2,ZEB1,FAT4,FBXW8,DIP2A,HOOK3,GPR137B,ROCK2,C1QL3,POU1F1,CCDC141,YTHDF3,PAFAH1B1,BCL2,KL,PPP1R9A,RAP1GAP,INO80D,NRIP1,ITGA1,ITSN2,HIRA,UFL1,EPHA4,COL4A3,ADAMTS2,PRKAA1,FRYL,MYT1,ASH1L,SORBS2,PIK3R3,MEGF10,RAB38,VMP1,VSTM4,CTSB,MORC3,NDRG2,NEDD4L,PLS1,HDGFL3,ANK2,XRCC4,POTEJ,PHC2,DCAF1,KALRN,KIAA0319L,BMP7,ANKRD17,S100B,ARHGAP12,FLI1,CDHR3,ITGB8,CDH11,RBPMS2,ATP6V1E1,LMX1A,KPNA1,FUT8,ADCYAP1R1,LAMC1,EPHB1,MYOCD,TRIM58,PLPPR5,PTCD2,FLT1,RB1CC1,NPHP4,FOXJ3,PDE2A,IL17RD,ATP6V1B2,NCS1,TRPC5,LOXL2,FTO,CDH9,ADAM28,FGF9,NIN,SLC1A1,MEOX2,DDX6,PLEKHB2,PRKD1,RBM47,SHROOM3,MSI2,ETS1,SYNE1,SNRK,ALKAL2,PLPPR1,MAP2,TGFA,NUMB,SMTN,ZMYM4,VCAN,ATAT1,DDHD1,MATN2,CRACR2A,ZNF431,CELSR2,CFAP97,PTPRJ,TET1,CATSPER2,LMX1B,SHLD2,SHC4,UST,TLL1,CALD1,UBE3A,ADAM22,HTR2A,CHN1,GATAD2B,TRPS1,INO80,STRN,CRISPLD2,CLDN18,ADCY9,ANO6,HIPK1,BRWD1,MEF2C,TRAPPC6B,MYB,SLC39A6
GO:0048813	dendrite morphogenesis	0.008936902254655548	FBXW8,DIP2A,PAFAH1B1,EPHA4,NEDD4L,KALRN,EPHB1,TRPC5,SYNE1,MAP2,CELSR2,UBE3A
GO:0000902	cell morphogenesis	0.013897165395899901	PRTG,MYO9B,PACSIN2,FBXW8,DIP2A,PAFAH1B1,BCL2,ITGA1,ITSN2,EPHA4,FRYL,NEDD4L,PLS1,POTEJ,KALRN,BMP7,S100B,CDHR3,CDH11,LMX1A,EPHB1,TRPC5,CDH9,NIN,SHROOM3,SYNE1,MAP2,NUMB,ZMYM4,MATN2,CELSR2,UST,UBE3A,CHN1,BRWD1,MEF2C

GO:0048667	cell morphogenesis involved in neuron differentiation	0.014636586704668964	PRTG,FBXW8,DIP2A,PAFAH1B1,BCL2,EPHA4,NEDD4L,PLS1,POTEJ,KALRN,BMP7,S100B,CDH11,LMX1A,EPHB1,TRPC5,NIN,SYNE1,MAP2,NUMB,MATN2,CELSR2,UST,UBE3A,CHN1,MEF2C
GO:0048858	cell projection morphogenesis	0.016439276546125627	PRTG,MYO9B,PACSIN2,FBXW8,DIP2A,PAFAH1B1,BCL2,ITGA1,ITSN2,EPHA4,NEDD4L,POTEJ,KALRN,BMP7,S100B,CDH11,LMX1A,EPHB1,TRPC5,NIN,SYNE1,MAP2,NUMB,MATN2,CELSR2,UST,UBE3A,CHN1
GO:0048699	generation of neurons	0.017789961757975727	MAP4,NBN,PRTG,ZEB1,FAT4,FBXW8,DIP2A,PAFAH1B1,BCL2,PPP1R9A,RAP1GAP,ITGA1,ITSN2,EPHA4,FRYL,NEDD4L,PLS1,HDGFL3,POTEJ,KALRN,KIAA0319L,BMP7,S100B,CDH11,LMX1A,EPHB1,PLPPR5,NPHP4,NCS1,TRPC5,NIN,DDX6,PRKD1,SYNE1,ALKAL2,MAP2,NUMB,VCAN,ATAT1,MATN2,CELSR2,LMX1B,UST,UBE3A,CHN1,STRN,HIPK1,MEF2C
GO:0022008	neurogenesis	0.018340249407298108	MAP4,NBN,PRTG,ZEB1,FAT4,FBXW8,DIP2A,HOOK3,PAFAH1B1,BCL2,PPP1R9A,RAP1GAP,ITGA1,ITSN2,UFL1,EPHA4,FRYL,NEDD4L,PLS1,HDGFL3,POTEJ,KALRN,KIAA0319L,BMP7,S100B,CDH11,LMX1A,EPHB1,PLPPR5,NPHP4,NCS1,TRPC5,NIN,SLC1A1,DDX6,PRKD1,SYNE1,ALKAL2,MAP2,NUMB,VCAN,ATAT1,MATN2,CELSR2,LMX1B,UST,UBE3A,ADAM22,CHN1,STRN,HIPK1,MEF2C,MYB
GO:0048666	neuron development	0.018574943327500554	MAP4,PRTG,FAT4,FBXW8,DIP2A,PAFAH1B1,BCL2,PPP1R9A,ITGA1,ITSN2,EPHA4,FRYL,NEDD4L,PLS1,HDGFL3,POTEJ,KALRN,BMP7,S100B,CDH11,LMX1A,EPHB1,PLPPR5,NPHP4,NCS1,TRPC5,NIN,PRKD1,SYNE1,ALKAL2,MAP2,NUMB,ATAT1,MATN2,CELSR2,UST,UBE3A,CHN1,STRN,MEF2C
GO:0031331	positive regulation of cellular catabolic process	0.023026859485269134	PARN,TRIM23,ROCK2,YTHDF3,UFL1,PRKAA1,ZC3HAV1,VPS13D,TRIM58,RB1CC1,FTO,RAB3GAP2,PRKD1,TNRC6C,DEPTOR,HTR2A,AGO3,CNOT6L
GO:0098662	inorganic cation transmembrane transport	0.0243561941888359	SLC15A2,TSPAN13,BCL2,SLC13A4,VMP1,SLC25A18,NEDD4L,ANK2,KCNN3,KCNAB1,ATP6V1E1,ADCYAP1R1,CBLIF,ATP6V1B2,KCNJ1,NCS1,TRPC5,PLCB4,SLC6A1,SLC1A1,TRPM1,CACNG3,AKAP9,PRKD1,CRACR2A,ATP6V0D2,CATSPER2,HTR2A,ANO6,KCNE4,SLC39A6
GO:0048856	anatomical structure development	0.02630830178799854	MAP4,ATRX,NBN,PRTG,ADAMTS18,SEC24D,KMT2E,MYO9B,PACSIN2,ZEB1,FAT4,FBXW8,DIP2A,HOOK3,GPR137B,ROCK2,C1QL3,POU1F1,CCDC141,YTHDF3,PAFAH1B1,BCL2,KL,PPP1R9A,RAP1GAP,INO80D,NRIP1,ITGA1,ITSN2,HIRA,UFL1,EPHA4,COL4A3,ADAMTS2,PRKAA1,FRYL,MYT1,ASH1L,SORBS2,PIK3R3,MEGF10,VMP1,VSTM4,CTS

			B,MORC3,NDRG2,NEDD4L,PLS1,HDGFL3,A NK2,XRCC4,POTEJ,DCAF1,KALRN,KIAA03 19L,BMP7,ANKRD17,S100B,ARHGAP12,FL I1,CDHR3,ITGB8,CDH11,RBPMS2,LMX1A, KPNA1,FUT8,ADCYAP1R1,LAMC1,EPHB1,M YOCD,TRIM58,PLPPR5,PTCD2,FLT1,RB1C C1,NPHP4,PDE2A,IL17RD,NCS1,TRPC5,L OXL2,FTO,CDH9,FGF9,NIN,SLC1A1,MEOX 2,DDX6,PRKD1,RBM47,SHROOM3,MSI2,ET S1,SYNE1,SNRK,ALKAL2,PLPPR1,MAP2,T GFA,NUMB,SMTN,ZMYM4,VCAN,ATAT1,DDH D1,MATN2,CRACR2A,CELSR2,PTPRJ,TET1 ,CATSPER2,LMX1B,SHLD2,UST,TLL1,CAL D1,UBE3A,ADAM22,CHN1,TRPS1,INO80,S TRN,CRISPLD2,CLDN18,ADCY9,ANO6,HIP K1,BRWD1,MEF2C,TRAPPC6B,MYB,SLC39A 6
GO:0007275	multicellular organism development	0.027628340132 392425	MAP4,ATRX,NBN,PRTG,ADAMTS18,SEC24D ,ZEB1,FAT4,FBXW8,DIP2A,HOOK3,GPR13 7B,ROCK2,C1QL3,POU1F1,CCDC141,YTHD F3,PAFAH1B1,BCL2,KL,PPP1R9A,RAP1GA P,INO80D,NRIP1,ITGA1,ITSN2,HIRA,UF L1,EPHA4,COL4A3,ADAMTS2,FRYL,MYT1, ASH1L,SORBS2,PIK3R3,VMP1,VSTM4,MOR C3,NDRG2,NEDD4L,PLS1,HDGFL3,ANK2,X RCC4,POTEJ,DCAF1,KALRN,KIAA0319L,B MP7,ANKRD17,S100B,ITGB8,CDH11,RBPM S2,LMX1A,FUT8,ADCYAP1R1,EPHB1,MYOC D,PLPPR5,PTCD2,FLT1,RB1CC1,NPHP4,P DE2A,NCS1,TRPC5,LOXL2,CDH9,FGF9,NI N,SLC1A1,MEOX2,DDX6,PRKD1,SHROOM3, MSI2,ETS1,SYNE1,ALKAL2,PLPPR1,MAP2 ,TGFA,NUMB,VCAN,ATAT1,MATN2,CELSR2 ,PTPRJ,TET1,LMX1B,SHLD2,UST,TLL1,C ALD1,UBE3A,ADAM22,CHN1,TRPS1,INO80 ,STRN,CRISPLD2,CLDN18,ADCY9,ANO6,H IPK1,MEF2C,TRAPPC6B,MYB
GO:0098660	inorganic ion transmembra ne transport	0.031760222043 31626	SLC15A2,TSPAN13,BCL2,SLC13A4,VMP1, SLC25A18,NEDD4L,ANK2,KCNN3,KCNAB1, ATP6V1E1,SLC37A1,ADCYAP1R1,CBLIF,A TP6V1B2,KCNJ1,NCS1,TRPC5,PLCB4,SLC 6A1,SLC1A1,TRPM1,CACNG3,AKAP9,PRKD 1,CRACR2A,ATP6V0D2,CATSPER2,HTR2A, ANO6,KCNE4,CLIC6,SLC39A6
GO:0032989	cellular anatomical entity morphogenes is	0.036579289930 047935	PRTG,MYO9B,PACSIN2,FBXW8,DIP2A,PAF AH1B1,BCL2,ITGA1,ITSN2,EPHA4,NEDD4 L,ANK2,POTEJ,KALRN,BMP7,S100B,CDH1 1,LMX1A,EPHB1,TRPC5,NIN,PRKD1,SYNE 1,MAP2,NUMB,MATN2,CELSR2,UST,UBE3A ,CHN1
GO:0120039	plasma membrane bounded cell projection morphogenes is	0.040184439041 797256	PRTG,MYO9B,FBXW8,DIP2A,PAFAH1B1,BC L2,ITGA1,ITSN2,EPHA4,NEDD4L,POTEJ, KALRN,BMP7,S100B,CDH11,LMX1A,EPHB1 ,TRPC5,NIN,SYNE1,MAP2,NUMB,MATN2,C ELSR2,UST,UBE3A,CHN1
GO:0098655	monoatomic	0.041062670075	SLC15A2,TSPAN13,BCL2,SLC13A4,VMP1, SLC25A18,NEDD4L,ANK2,KCNN3,KCNAB1,

	cation transmembrane transport	40742	*ATP6V1E1,ADCYAP1R1,CBLIF,ATP6V1B2, KCNJ1,NCS1,TRPC5,PLCB4,SLC6A1,SLC1 A1,TRPM1,CACNG3,AKAP9,PRKD1,CRACR2 A,ATP6V0D2,CATSPER2,HTR2A,ANO6,KCN E4,SLC39A6*
GO:0030182	neuron differentiation	0.043205313593 30936	*MAP4,PRTG,ZEB1,FAT4,FBXW8,DIP2A,PA FAH1B1,BCL2,PPP1R9A,RAP1GAP,ITGA1, ITSN2,EPHA4,FRYL,NEDD4L,PLS1,HDGFL 3,POTEJ,KALRN,BMP7,S100B,CDH11,LMX 1A,EPHB1,PLPPR5,NPHP4,NCS1,TRPC5,N IN,DDX6,PRKD1,SYNE1,ALKAL2,MAP2,NU MB,ATAT1,MATN2,CELSR2,LMX1B,UST,UB E3A,CHN1,STRN,HIPK1,MEF2C*

Table S10. The intersections among lincRNAs associated with rDNA-conataninig genes in HEK293T cells, in K562 before (K562) and after induced differentiation (K562-diff.) Related to the Venn diagram presented in Figure 3B.

Names	total	elements
linc-HEK293T linc-K562-diff. linc-K562	31	*CXXC4-AS1 PRICKLE2-AS1 LINC02552 SLC8A1-AS1 LINC01741 LINC01602 EDIL3-DT MKLN1-AS LINC02720 NKAIN3-IT1 ARHGEF7-AS1 SEMA6A-AS2 ZNF32-AS3 ADAMTS9-AS2 ARHGEF7-IT1 FRMPD3-AS1 LINC01640 ANKRD62P1-PARP4P3 LINC00689 LINC01651 SLC6A1-AS1 PRICKLE2-AS3 GSN-AS1 NMBR-AS1 LINC02598 LINC02520 PPP1R12A-AS1 PGR-AS1 NNT-AS1 CHL1-AS1 LRRC7-AS1*
HEK293T linc-K562-diff.	36	*LINC02051 TRAF3IP2-AS1 LINC01074 LINC02339 LINC02226 LMCD1-AS1 MAPT-AS1 CPB2-AS1 LINC01415 ASIC4-AS1 ARHGEF26-AS1 GNG12-AS1 LINC00928 LINC00945 OPCML-IT1 LINC01546 LINC02060 LINC02058 KCNMA1-AS1 LINC00461 LINC02774 NCAM1-AS1 JAKMIP2-AS1 DSCAM-IT1 LINC02008 LINC00391 LINC01690 SEC23A-AS1 TMEM72-AS1 SOX21-AS1 LINC01572 LRP4-AS1 NRXN2-AS1 CCND2-AS1 LINC01351 GPR158-AS1*
linc-K562-diff. linc-linc-K562	146	*MYCBP2-AS1 SHANK2-AS3 TGFA-IT1 NCKAP5-AS1 PKP4-AS1 AGBL4-IT1 C1QTNF7-AS1 WWTR1-IT1 FGF10-AS1 KCNMA1-AS3 LINC00517 ID2-AS1 LINC00839 SFTPD-AS1 MSC-AS1 SYNE1-AS1 LINC02017 LINC02115 LINC01945 TSPAN18-AS1 MYO16-AS2 GLCCI1-DT EGFLAM-AS3 RORB-AS1 LINC02676 LINC01761 LINC00362 LINC02794 MAPK10-AS1 ANO3-AS1 LINC02157 PCDH9-AS4 DOCK4-AS1 LINC00710 CNTN4-AS2 DLG2-AS2 TSC22D1-AS1 CREB3L2-AS1 RORA-AS2 PTPRG-AS1 LINC01906 FAM13A-AS1 LINC02024 LINC00836 PEX5L-AS2 NAV2-AS2 TPM1-AS LINC00446 UST-AS1 LINC01069 FAM198B-AS1 LINC01087 SH3TC2-DT SLC25A48-AS1 OIP5-AS1 GPC6-AS2 LINC00499 LINC01924 LAMP5-AS1 SHANK2-AS2 LINC00484 LINC02827 OBI1-AS1 LINC01751 PRICKLE2-AS2 RAMP2-AS1 LAMC1-AS1 LINC02556 EGFR-AS1 LINC01739 WDFY3-AS1 MFF-DT LRRC8C-DT SRGAP3-AS1 LDLRAD4-AS1 EDRF1-AS1 FRMD6-AS1 SMAD9-IT1 PKIA-AS1 NAV2-AS1 LINC01538 CNTN4-AS1 TMEM26-AS1 NAV2-AS5 MAGI2-AS1 RBMS3-AS1 PABPC5-AS1 LINC02224 LINC01567 RERG-AS1 NAV2-AS3 MAPRE3-AS1 SLIT2-IT1 NR2F2-AS1 INHBA-AS1 C3orf67-AS1 SEMA6A-AS1 STARD13-AS LINC00387 PAPPA-AS1 TSPAN9-IT1 CLSTN2-AS1 MRPS30-DT LINC02334 TUB-AS1 SHANK2-AS1 KCNIP1-AS1 PACRG-AS2 LINC02035 LINC02030 LINC02151 LINC00457 CYP1B1-AS1 NCKAP5-IT1 LINC01293 LINC00564 LINC01677 RBMS3-AS2 LINC01255 ARHGAP31-AS1 LINC00498 WDFY3-AS2 FBXW7-AS1 LINC01238 LINC00472 VWC2L-IT1 LINC01344 LINC00305 LRP1-AS LINC02006 MAST4-IT1 LINC01490 LINC01801 LINC00862 TPRG1-AS2 ETV5-AS1 LINC02571*

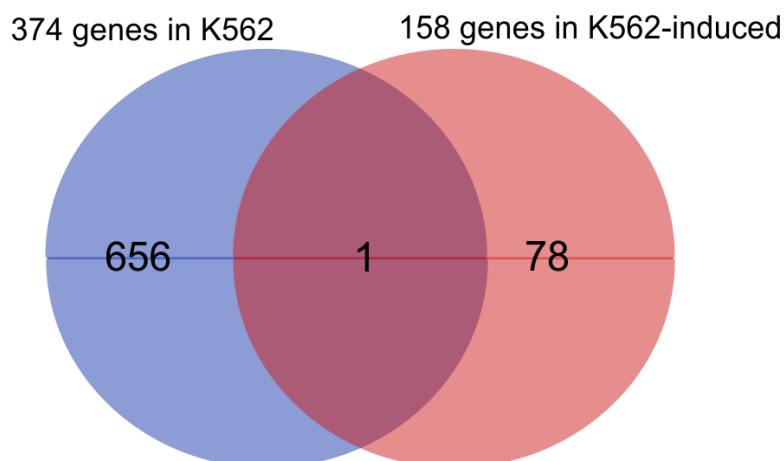|		
		RERG-IT1 LINC02516 VLDLR-AS1 LINC02199 LINC01088 SLC16A12-AS1 PPP3CB-AS1 LINC00504 SLC14A2-AS1
linc-HEK293T	57	*SEPTIN7-AS1 LINC01516 LINC01114 LINC00652 LINC01963 MIR9-3HG CTNNA2-AS1 LINC00609 LINC02798 NKX2-2-AS1 LINC01141 LINC02282 RIC3-DT BDNF-AS LINC00298 LINC00437 LINC02318 LINC01727 ADGRL3-AS1 LINC01066 LINGO1-AS1 LINC02134 GRID1-AS1 LINC02549 LINC02440 LINC00906 NFIA-AS2 LINC02110 LINC01340 LINC02488 LINC00396 LINC01563 LINC00511 LINC02283 LINC01102 LINC02588 INKA2-AS1 EDNRB-AS1 LINC01397 FOXG1-AS1 MRVI1-AS1 LINC01103 MYLK-AS1 LINC00994 LINC02144 LINC02234 GDNF-AS1 NR2F1-AS1 LINC01349 LINC00237 LINC01152 SOX2-OT LINC02731 LINC01561 LINC00606 LINC02293 NDP-AS1*
linc-K562	21	*LINC01016 LINC02085 LINC02679 EIPR1-IT1 GPC5-AS2 IQCJ-SCHIP1-AS1 ZFAT-AS1 LINC00863 LINC01209 LINC00630 DENND6A-AS1 ENTPD1-AS1 LINC00654 TTC3-AS1 BRWD1-AS1 ZMYM4-AS1 GCC2-AS1 GPC5-IT1 ZBTB20-AS4 LINC01674 LINC01208*
linc-K562-diff.	99	*LINC02281 LINC02764 LINC02607 PACRG-AS3 LINC00349 LINC02427 KCND3-AS1 LINC01060 DAAM2-AS1 TCF7L1-IT1 PTPRD-AS1 BASP1-AS1 KCNIP4-IT1 FGF12-AS1 NAALADL2-AS2 LINC02306 LINC01266 RPS6KA2-IT1 LINC02510 LINC01865 LINC00320 CACNA1C-AS4 KLF7-IT1 LINC00698 LINC00327 OPCML-IT2 LINC02338 LINC00456 PTENP1-AS HIF1A-AS3 LINC01338 KAZN-AS1 LINC02389 DIRC3-AS1 LINC02239 LINC01998 NAALADL2-AS3 HTR5A-AS1 SBF2-AS1 FGF14-IT1 LINC01671 CCDC144NL-AS1 NLGN1-AS1 LINC02188 LINC02123 LINC02296 DLGAP2-AS1 LINC00571 WDR11-AS1 NPTN-IT1 LINC00641 ASTN2-AS1 LINC01581 CADM2-AS1 ATP2B2-IT2 LINC02330 LINC00622 GRM5-AS1 TMEM108-AS1 UFL1-AS1 TMEM132D-AS2 NREP-AS1 LINC01323 DPYD-AS1 THRB-AS1 RAPGEF4-AS1 LINC01600 CPEB2-DT ADGRF5-AS1 LINC00500 LINC01785 CADM3-AS1 NRG3-AS1 LINC02052 LINC02564 COL18A1-AS1 ATXN1-AS1 THSD4-AS1 KCNMA1-AS2 MYT1L-AS1 KIRREL3-AS3 LINC02693 PTPRD-AS2 LINC00943 LINC01320 GRM3-AS1 LINC02656 LINC02078 CD44-AS1 LINC02735 LINC02431 SNCA-AS1 PPM1K-DT TAB2-AS1 TEX26-AS1 WARS2-IT1 BARX1-DT LINC02047 LINC00844*

Figure S1. Venn diagram shows the detected intersection among lincRNAs associated with 374 mostly actively expressed genes in initial cells and the 158 genes enriched by repressed genes in K562-induced cells. Related to Figure 2A and 2E. There is only one common lincRNA – LINC02185.