Supplementary Table 2. Top twenty-five networks obtained from IPA analysis of differentially expressed genes among control, MA-, cocaine-, and heroin-treated groups.

Network ID	Genes in network	Score	Focus genes	Top diseases and functions
MA vs. Control				
1	ADGRB3, AMOTL2, AURK, BANP, BCL2L13, CDC14B, CERS2, CERS6, Ck2, CSTF1, CYFIP2, DMTF1, FAM3C, GRIN1, HMGCS1, HS3ST1, HSPA4L, INPP4A, LAMP2, NOLC1, OMA1, PCBP4, PTPRA, RALY, RPL26, RPS27L, SGTB, SH3BP4, SLC19A1, STOM, TFAM, TP53, TRIM24, TRIO, YPEL3	31	33	Neurological Disease, Organismal Injury and Abnormalities, Psychological Disorders
2	AP2B1, AP2M1, ARF1, CAPZA1, CDK5RAP2, CNOT2, CNOT8, DLAT, EPS15, GRB2, HSP90AB1, IRS2, MAP3K4, MATR3, MCM6, Mlc, NISCH, p85 (pik3r), PCMT1, PI3K (complex), RALGAPA1, RALGAPB, RARS, RPL10, RPS14, RPS15A, SLC3A2, SLC4A2, SLC7A5, SLC7A8, SOS2, TJAP1, TYK2, WIPF2, ZNF609	29	32	Amino Acid Metabolism, Molecular Transport, Small Molecule Biochemistry
3	AMPH, BEX2, CLEC11A, COPS5, CPNE4, DYNLL1, GPR34, HLA-F, IGBP1, Ikb, IKK (complex), MIB2, NFkB (complex), OPTN, OTUD7B, PKN3, PPP2R5C, RAP1GDS1, RASSF5, RFK, RNF11, RNF112, RTF1, RTKN, TAB2, TANK, Tnf receptor, TNPO2, TRADD, TRAF1, TRAF2, TRIM37, UBE2V1, USP11, ZNF385A	27	31	Cell Signaling, Infectious Diseases, Post-Translational Modification
4	AGK, ALDOA, CEACAM3, CLEC4A, CSPG4, CYP46A1, DNM2, ERK1/2, FAM120A, FCGR1A, FLT1, Focal adhesion kinase, GMFG, GRN, HCK, Hif1, HSF4, ITGAV, LRRN1, MMP16, NOD1, P2RY2, PACSIN2, PIK3R2, PRR7, PTPRJ, PTPRZ1, Rac, RBP4, SEMA4A, SHC3, SPTAN1, SRC (family), VAV2, VEGFB	25	30	Cellular Movement, Cell-To-Cell Signaling and Interaction, Cellular Function and Maintenance
5	ACSS2, ADD1, ANK2, ARHGAP5, BCL2L1, CD47, CPEB4, CTNND1, DAP3, DNM1L, EIF4G1, G-protein beta, HISTONE, HRK, HSPA4, MAP2, MIF4GD, MYH10, NCAM1, NFkB (family), NFYB, NLGN1, PADI2, PARP, PEX5, PEX14, PLCB2, PNPT1, RASA1, RNPS1, Sfk, SPTBN1, SRSF11, TNFSF13, USP9X	25	30	Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function
6	ABCD3, CD3, CD200, CISH, CTSH, DOCK1, ELF1, GRK4, IARS, IFT27, IFT88, IL4I1, LDHB, LMNB1, MDH1, MXI1, NCK1, NCK2, ORAI2, PECAM1, PRKACB, RPL31, RPS17, RSAD2, Shc, SLC7A1, SNX5, Talin, TCR, TLE3, TPI1, TRAF3IP1, UNC13D, VAV, VDAC3	25	30	Cellular Movement, Cell Morphology, Cellular Assembly and Organization
7	ANXA6, ATRX, BAZ1A, CDK2AP2, CDK5R1, ERK, FLT3LG, G6PD, HAS3, HAT1, HDAC10, HIRA, Histone h3, Histone h4, HNRNPUL1, MADD, MEF2D, MGMT, MTA1, NASP, NCF1, PEA15, PPME1, RAS, RASA2, RBBP4, RGS3, SAP30, SIRT3, SMARCA1, Sos, Top2, TSPYL1, ZNF592, ZNF512B	23	29	Cell Death and Survival, Cell Cycle, Cellular Assembly and Organization
8	ATF2, CAMK2G, caspase, Caspase 3/7, Cdk, DAB2, DIABLO, DLG4, EIF4E, FBXW11, FGFR1OP2, FOXK2, GSK3B, HSPB1, Jnk, LDLRAP1, MAP2K4, MAP3K11, MAP4K5, MCL1, NF2, NME4, NRCAM, PCSK6, PDCD10, PLEKHF1, Ppp2c, PPP2R1A, PPP2R5A, SPTBN2, STK24, TCF, TNFRSF10D, TNFSF10, USP47	23	29	Cell Death and Survival, Cell Signaling, Post-Translational Modification
9	ABCF2, ADM, AMPK, Cbp/p300, COL4A3BP, Collagen type IV, EIF3B, ENO2, FHL1, GLYR1, HIF1A, HIPK2, Hsp90, HUWE1, MPRIP, MRAS, NAE1, NUCKS1, NUDCD2, PFKFB3, PTBP1, PTGES3, PTPN2, Rap1, RAPGEF1, RAPGEF3, RAPGEF6, RASSF2, RASSF4, Rock, RRAS, SLC29A1, UTP18, VASP, ZYX	23	29	Cellular Movement, Connective Tissue Development and Function, Cardiovascular Disease
10	Actin, AKR1B10, Ap2, ARVCF, ASH2L, CPSF1, CREBBP, CSDE1, DBN1, GAS8, Hdac, HK1, IFRD1, JUP, KLF10, MAX, mediator, MNT, NAV2, NDRG4, PI3K (family), PI3K p85, PKP2, PROM1, PTGS1, PTPRF, RDX, SIN3A, SLC1A2, SRRM1, TADA3, TAF9, TAF12, TERT, TRRAP	23	29	Developmental Disorder, Embryonic Development, Organismal Development
11	26s Proteasome, ABCA1, ANKS1B, ARHGEF11, ARPC4, calpain, CXCL12, Cyclin E, EIF4G3, FBXL5, FUBP1, GATA2, GTF2I, HERC2, HLTF, Importin beta, KIAA0368, LPAR1, MAPK8IP2, MFN1, NFKB2, NPLOC4, NUP50, PSAP, PSMD14, RAN, RANGAP1, RAP1A, Ras homolog, ROCK1, TOLLIP, Ubiquitin, USP33, UVRAG, WIPI1	23	29	Cellular Movement, Hematological System Development and Function, Humoral Immune Response
12	ANKRD17, ANP32B, CCNA2, CDC20, CDH8, CNNM1, COL4A5, Cyclin A, E2f, EGLN, EIF4A2, estrogen receptor, FBXL18, FGFR1, FGFR3, Gamma tubulin, GPR146, HERPUD1, HIST1H2BJ, HK2, IFI27L1, MAP1B, MAP2K1/2, PCDH1, PCDH8, PDE4DIP, PLEC, PRDM2, RNF165, SLC27A1, TARBP2, TUBGCP4, TUBGCP5, UXT, XPO1	23	29	Connective Tissue Disorders, Developmental Disorder, Hereditary Disorder
13	14-3-3, ACTR2, Alpha catenin, AUP1, CCAR1, CENPC, CLDN5, CPSF2, CUX1, DCBLD2, EFNA1, Fibrinogen, GPN1, GPT, IQSEC1, ITGB2, LIMA1, MAP7, MINOS1, Mmp, OS9, P-TEFb, PCDHAC2, PDLIM5, RGS7, RHOBTB3, RNA polymerase II, RPS11, SP5, SRRM2, SUMO1, THOC1, TJP1, UBA2, WNT7B	23	29	Cancer, Hematological Disease, Immunological Disease
14	ATP2A2, CD34, DDB2, EFNB2, Eif4g, EWSR1, HDL, HERC1, HNRNPD, HNRNPM, HS3ST4, Hsp27, Hsp70, LDL, MFNG, NCAN, NCBP1, NOS3, NOTCH4, POLB, RPL34, RPS20, Rsk, SCARB1, SRPK2, TCERG1, TERF1, TERF2, TIA1, TIAL1, TNPO1, UBE2E2, USP8, Vegf, VEGFA	22	28	Cell Morphology, Cellular Development, Cardiac Arteriopathy
15	ABCE1, ABI2, AKAP11, ARFGEF1, ATF1, B4GALT6, CLASP2, CLK2, CLSTN2, Creb, DNER, DNMT1, FAAP100, FANCE, FANCG, FKBP2, FTH1, HES1, HMGA1, IFN Beta, INSIG1, KIF21A, MAPK7, Mek, N-cor, Pka catalytic subunit, PTPRR, Raf, RELN, Secretase gamma, SEMA4C, SPRED2, TIE1, TRAIP, TRIM32	22	28	Embryonic Development, Nervous System Development and Function, Organismal Development
16	ADCY, ADD2, ADORA2A, BCR, CAMK1, Collagen Alpha1, Collagen type I, Collagen type III, Collagen type V, Collagen(s), DGKI, Eotaxin, ERP29, FN1, GNB1, HDAC5, ITGA2, ITPR2, L3MBTL1, LAIR1, MAPK1, MARK3, MAST3, NMI, NPY1R, NR4A1, PAQR6, PHF11, PLSCR1, PLXDC1, SECTM1, SHANK2, SPOCK1, Tgf beta, ZBTB7B	20	27	Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Cell Morphology
17	ABCG2, ABTB1, AQP4, BCR (complex), Calmodulin, CCND3, CDK14, ENPP2, Erm, FBXO7, FOXP1, GIMAP7, hemoglobin, IGLL1/IGLL5, Igm, IL18, IL2RG, Immunoglobulin, INPP5D, Interferon alpha, ITSN2, KCNQ2, KCNQ3, KIT, MOB3C, MYADM, PIR, REST, SERPINB9, Smad2/3, SNAP25, SPATS2, SRRM4, SYK, USP53	20	27	Cellular Development, Cellular Growth and Proliferation, Embryonic Development
18	ACVR2A, APBB1, BMP4, CDKN2C, CSNK2B, CYP27A1, FOXO3, FSH, Gm-csf, Growth hormone, HPN, IgG, IL12 (complex), KAT5, KLF4, LEMD3, MAPK9, MEX3C, NETO2, NLGN4X, OLR1, OVOL1, PDXK, Pkc(s), PLCH1, PRKAG1, PRR5L, SCN2A, SH3KBP1, SLC38A3, Smad1/5/8, SNPH, SPINT1, STAT5a/b, VPS53	20	27	Immunological Disease, Organismal Injury and Abnormalities, Cellular Development
19	ACSL6, Ap1, BICD2, CASK, CCM2, CD3 group, CENPJ, DCTN1, DCTN2, Dlg, Dynein, EIF2S2, EPB41, Fcgr3, GOLGA2, GORASP1, KIF13B, LAT, LCP2, LRP8, MAP2K6, MAP3K3, MAP4K4, NCK, NEU4, Nfat (family), P38 MAPK, PLC gamma, RCAN1, SARM1, SEC16A, SEC23A, SLC9A1, TRAF7, TRAF3IP2	19	26	Cell Cycle, Cellular Assembly and Organization, Cellular Function and Maintenance
20	AKAP, Akt, ARFIP1, B4GALT5, BAD, CDH13, CDK18, CHKA, CIB1, Cofilin, F Actin, Fgfr, GABBR2, GRB10, LANCL2, LCP1, MGLL, MTORC1, NCDN, NDFIP1, NRF1, p70 S6k, Pka, Pld, PP2A, PREX1, PRKAA, PRKD2, PRR14, RPS6KA1, RPTOR, SREBF2, SSH1, TFEB, TSC2	16	24	Cell Death and Survival, Cell Morphology, Inflammatory Response
21	ACTR3B, BAG5, BRINP3, CEP170B, DENND5B, DPYSL5, FLVCR1, MKL2, NUPR1, PCTP, PHTF1, PPWD1, PRDM4, PRR12, RAB29, RNFT2, UAP1	13	15	Cardiovascular Disease, Hematological Disease, Hereditary Disorder
22	ASPM, C11orf96, CD24, CHD7, CLIP2, CMBL, CMPK2, FXYD6, GHDC, GLI1, HUWE1, IDS, IPO7, KAT6A, KRT15, miR-22-3p (miRNAs w/seed AGCUGCC), MPZL2, NUDT11, PDLIM2, PHF10, PHLDA3, PLPPR2, PPP1R9A, PSTPIP2, PTP4A1, RBBP6, RPS6KA1, SCD5, SLC22A3, SV2A, TP53, TRIM24, TTC13, ULK1, YPEL3	13	21	Cell Death and Survival, Cellular Development, Cellular Function and Maintenance
23	ACYP1, AIFM3, BIN1, DAG1, DEDD2, EBAG9, ETNK2, IL7R, MAN2A1, MCF2, NR3C1, POMGNT1, PPP3CC, PRKAR1B, RBMS2, RNA polymerase II, SAP30BP, TM2D2, TP53, UBE2K	11	15	Cancer, Organismal Injury and Abnormalities, Reproductive System Disease
24	AGO2, BUD31, CHD7, CST5, DDX52, EFTUD2, ERBB2, FAM120B, FARSB, FBL, GRSF1, HNRNPR, INHBA, KRI1, let-7, LSM6, MAK16, MRTO4, NKRF, PRPF3, PRPF4, PRPF19, RBM4B, Rnr, TP53, TSR1, WDR75	11	17	RNA Post-Transcriptional Modification, Protein Synthesis, Cell Cycle
25	ATG13, BARD1, BCAT2, BMP4, C9orf72, CCNG2, CENPF, CENPM, DISC1, DNMT1, EHMT2, ENY2, ESR1, GPRIN1, LYPD1, MBD1, MBD2, MECP2, MGMT, MITF, PDE4D, RARA, RASSF1, RB1CC1, RBFOX2, RGS19, SHROOM1, SIN3A, SLC12A5, SMCR8, SPTBN4, TACC1, TOP1, ULK1, VPS36	10	19	Gene Expression, Cell Morphology, Cellular Function and Maintenance
Cocaine vs. Control				
1	BCR, CAMK2D, CHUK, DVL3, EGLN2, FASTKD1, FLII, HSP90AB1, Ikb, IKBKB, IKBKG, IKK (complex), KDM2A, KSR2, MIB2, MYLK, NFkB (complex), NOS1, PASK, PLAA, PPP2R5E, RNF31, RNF112, RTKN, RUSC2, SENP6, ST3GAL5, TANK, TNPO2, TRAF7, UBE2V1, USP21, ZC3H13, ZC3H18, ZNF385A	30	32	Gastrointestinal Disease, Hepatic System Disease, Organismal Injury and Abnormalities
2	26s Proteasome, ADRM1, ARID5B, BACE1, CELF1, DCLK1, DDR1, DYRK2, EIF2A, EIF4G1, EIF4G3, ERP29, Growth hormone, HIPK2, HNRNPA2B1, KIAA0368, MAVS, MFN1, NFASC, PAK3, PJA2, PP1 protein complex group, PPP1R11, PSMD2, RBM3, RIMKLB, RIMS1, RTN4, RTN4IP1, SEC23B, SEC24B, SORT1, UBE2D3, UBE3A, ZEB2	30	32	Cancer, Organismal Injury and Abnormalities, Cell Morphology
3	AASS, ANKS1B, ANO10, APOM, ARPC4, CA12, Calmodulin, CCNT2, CDH8, CLN8, CNNM1, COL6A2, CXCL12, estrogen receptor, FBLN5, FGF12, HIPK3, INIP, LIFR, LYPD1, MAP1B, NCAN, NRXN1, PCDH7, PCDH19, RARA, RNF38, RXRA, SHANK2, SIPA1L1, SLC1A3, TMEFF1, Ubiquitin, UBL3, ZNF141	30	32	Cell-To-Cell Signaling and Interaction, Nervous System Development and Function, Cell Cycle
4	ADD2, ADD3, ANKRD11, ASH1L, AURK, BTG3, EHMT2, ENO3, G6PD, GATAD2B, Histone h3, Histone h4, HMG20A, HNRNPUL1, HP1, KDM5C, MORF4L1, MTA1, NDUFAF7, NSD3, PHF12, PKIB, POLD4, POLDIP2, RCOR1, RPL10A, SEC31A, SIRT3, SRRM2, STOM, USP3, WIZ, ZNF239, ZNF532, ZNF592	28	31	Hematological Disease, Connective Tissue Disorders, Organismal Injury and Abnormalities
5	ATF2, ATP2B4, ATXN1, BACH1, BCLAF1, BNIP3L, BTRC, Caspase 3/7, DLG4, DUSP10, FBXL7, FBXW11, FDPS, FLCN, FUBP1, GADD45G, Gsk3, IPO8, Jnk, MAP1LC3, MAP4K5, MCL1, MFN2, MTORC1, PUF60, RASSF1, SEPT9, SF3B1, SLC36A1, SQSTM1, SREBF2, SSH1, SSH2, TFE3, ZNF281	27	30	Post-Translational Modification, Cell Cycle, Cell Death and Survival
6	ADD1, ANK2, CAV1, CRIM1, DDX6, DHX30, Dynamin, Eif4g, FNBP1L, FOLR1, GIGYF2, GRB14, HNRNPL, Hsp27, Hsp90, JUP, KIDINS220, KIT, LDB1, LIMCH1, LMO1, LONP2, LUZP1, MB21D2, NCBP1, Nr1h, PDPK1, PLIN1, POLDIP3, PRMT5, PTPRO, SPTBN1, SYNE1, TNS2, ZBED6	27	30	Cellular Assembly and Organization, Nervous System Development and Function, Cardiovascular Disease
7	AMPK, ARHGAP22, ARHGAP35, BCL11B, caspase, CCNL2, CDK11B, Cg, CREB1, CSDC2, DAPK1, DMD, FBXL19, HRK, MAPK9, MED15, MTA3, NCOR1, OTOF, PARG, PARP, PCDHAC2, Pkc(s), PKM, POLR2D, POLR2H, RAPGEF4, RNA polymerase II, SACS, SRSF4, STRADA, TAB2, TRO, URI1, XPA	25	29	Hair and Skin Development and Function, Cancer, Organismal Injury and Abnormalities
8	AEBP2, ARF1, ARHGEF12, CDK5RAP3, CLDN1, CLDN2, EED, EGFR, HARS, HLX, HOOK1, HSPA4, Mapk, Mek, MGAT5, MTMR2, NASP, NCAM1, NLGN2, PNPT1, PRKAA, PRKDC, PTPN11, PTPRF, PTPRK, Raf, RAS, RBBP4, Shc, SPART, SPRED2, SYMPK, Top2, TSC2, YES1	23	28	Cell Morphology, Hair and Skin Development and Function, Cell-To-Cell Signaling and Interaction
9	BCL9, CCT7, CHGA, Creb, DUSP1, EEF2K, ERK, FGFR2, FOS, HMGN1, IL1, JINK1/2, KCNA3, KLF5, KSR1, LPAR1, MAP2K1/2, MAPK7, Mlc, MPRIP, PPARGC1B, PPP2R2C, PSENEN, PTPRD, PTRH2, RGS5, RIPK2, RRM1, Sapk, STIM1, TRPC1, UACA, VCAN, WNK1, WWP1	23	28	Cellular Growth and Proliferation, Connective Tissue Development and Function, Tissue Development
10	ABL2, ADAM15, AGTPBP1, Alpha tubulin, ARHGAP5, ARHGAP21, BICD2, calpain, Cpla2, CUL7, CUL9, Cyclin E, DOCK1, Dynein, EGLN1, FHL1, FLOT1, FYN, HIF1A, IFN type 1, IL12 (complex), MAP2, METTL23, MIB1, PFKFB3, PLOD2, POLR3G, PRKCA, RASA1, RHOBTB3, SART1, STAT4, STAU1, STXBP3, TGFB2	23	28	Cardiovascular Disease, Cardiovascular System Development and Function, Organ Morphology
11	AKR1B10, APEX1, c-Src, CCAR2, CSDE1, DCP2, DDX17, DECR1, DROSHA, E2f, EXOSC4, GFRA1, GMNN, HNRNPAB, HNRNPM, HNRNPU, Hsp70, KMT2E, MAX, mediator, MTHFD1, NIPBL, NSUN2, PI3K (family), PI3Kp85, RPA, SMARCAL1, SMC1A, SUPT3H, SYNCRIP, TADA3, TAF9, TNPO1, USP22, VKORC1L1	23	28	RNA Post-Transcriptional Modification, Gene Expression, Developmental Disorder
12	ACTA2, Akt, BRAP, CADM1, Collagen Alpha1, DDX5, DGKD, HAS3, IMPDH2, LANCL2, LCN2, NOLC1, NOTCH2, NR4A1, NTRK3, p70 S6k, p85 (pik3r), PDGF BB, Pdgfr, PDGFRB, PI3K (complex), PRKAR2B, PTK2, PTPN2, PTPRZ1, SEMA3B, SIPA1, SPHK2, TOM1L1, TPD52, TSG101, TYK2, UBAP1, Vegf, VPS37A	22	27	Cellular Development, Cellular Growth and Proliferation, Cell Cycle
13	14-3-3, ABLIM1, AKAP11, ATP5PD, CBL, CD3, CFLAR, DHX58, F5, Fibrinogen, GNPDA1, GUCY1A2, IFT20, IFT27, IFT88, Integrin, LDHB, MDH1, NCKAP1, NELFE, NFAT (complex), ORAI1, ORAI2, PFDN6, PIK3R3, Pka catalytic subunit, PRKACB, PYGO2, Rap1, SH3KBP1, TCR, TIAM1, UBASH3B, WASF2, ZNF598	22	27	Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance
14	Actin, AUTS2, Collagen type I, DAG1, DARS, DHX36, EFNB2, ENPP2, Eotaxin, Focal adhesion kinase, Gamma tubulin, IL4R, Immunoglobulin, Interferon alpha, ITGAV, MARK4, MTCL1, PDE4DIP, PHF11, PLEC, POMGNT1, RABGAP1L, RDX, SGSM3, SOCS5, SOGA1, SPTAN1, SPTBN5, SRC (family), TDRD7, TIAF1, TLN1, TNK2, TRANK1, TRPC4	22	27	Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities
15	ACKR1, ADAM10, ADCY6, Alpha catenin, ANGPT1, ARHGEF11, ARRB1, BMPR2, CALU, CRMP1, ENAH, ERK1/2, FAM120A, G protein alphai, GORASP1, GRK3, IL6ST, ITSN1, Mmp, PLPP2, PP2A, Rac, RAP1GAP, Ras homolog, RBP4, Rock, RXFP3, SET, SMAD1/5, SMG1, STAM, SULF1, SULF2, TJP1, TNS1	20	26	Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance
16	ACSL4, Ap1, ASAP2, CD55, CD151, CD3 group, Collagen type IV, DIO2, Dlg, EIF5A, Erm, HERC2, ITGA2, KDELR3, LAMA3, LRP8, MOB4, MYEF2, NEU4, P38 MAPK, PEAK1, PI4KA, Pka, Ppp2c, PPP2R5A, RHOG, SDCBP, SLC9A1, SRA1, STK24, TMSB4, TNFSF13, TPPP, TRIO, USP33	20	26	Cellular Movement, Cell Morphology, Skeletal and Muscular System Development and Function
17	AATF, ABI2, BCAT2, CAMSAP2, DCBLD2, DDX42, DHX33, EFNA5, ELF1, GRSF1, IFN Beta, MBD1, MPHOSPH6, MYBBP1A, MYO1C, NCAPD3, NCAPG2, NCAPH2, NKRF, NUP153, P-TEFb, PDLIM5, POLR1A, PRPF3, Rnr, RPS17, SDAD1, TRIM32, UBE2I, UTP14C, WDR46, WDR75, XPO1, XRN2, ZNF106	20	26	RNA Post-Transcriptional Modification, Cell Death and Survival, Embryonic Development
18	ARHGAP35, ARL4C, ARPC4, ATP2A2, ATP9A, BNIP3L, CUL4A, FSH, GNRHR, GPRC5B, HDAC5, HERC3, KIDINS220, Lh, MAMLD1, NLK, P4HA2, PLCL1, PLPP1, PPIH, PTPRE, PTPRF, PTPRN, RAB1A, RAB5C, RANGAP1, RASAL2, RGS5, RNF138, TK1, TLK1, TP53I11, TUBA1A, UBQLN1, ZEB1	12	20	Cancer, Organismal Injury and Abnormalities, Reproductive System Disease
19	ANKRD17, ARPP21, ATOX1, BHMT2, BOC, CCNA2, CCNB1, CCNE1, CDKN1B, CDKN1C, COL25A1, DIAPH2, DOCK1, ERG, ETS1, FMNL2, GATA3, GPATCH2L, GSTO1, HELLS, HR, KCNIP1, LMO2, OSBPL1A, OXR1, PREX2, PTPN4, RAB7A, RASSF1, RPA1, SERPINB2, STK17A, TAL1, TOX, XRCC6	12	20	Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance
20	AGTR1, ARHGAP32, AURKA, AURKAIP1, C1QBP, CLNS1A, DDX50, DDX3X, DHX16, FBL, G3BP2, HDLBP, HNRNPU, KCNAB1, MAST2, MPZL1, NME1, NUFIP1, PABPC1, PABPC4, PFKFB3, PIH1D1, PLCB1, PPIG, PRKAG1, PRMT5, RIOK1, RNGTT, RNU4-1, RPAP3, RPL14, SLC2A4, TTBK2, TUBA1A, ZNF706	12	20	RNA Post-Transcriptional Modification, Hereditary Disorder, Neurological Disease
21	ACTR3B, ADAM22, BAG5, BRI3BP, CHMP1B, MKKS, MKL2, NUPR1, PLEKHM3, PPWD1, RAB29, RANBP6, RNFT2, SLC25A12, SPAST, SPG7, UAP1	12	14	Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance
22	A2M, C2CD2L, CAND1, CCND1, CCNE1, CDK4, CDK6, CUL1, CUL3, Cyclin A, DCUN1D5, F2, FAM204A, FBXO7, FLNA, FOS, Hsp27, HSPB1, IPO5, KEAP1, KLC1, MFSD6, MTMR1, PMS1, PRMT2, PSMC3IP, RBX1, RUFY3, SKP2, SNRK, STARD4, SUGP2, TIGD1, TRPC1, ZMIZ2	11	19	Cell Cycle, Cardiovascular System Development and Function, Skeletal and Muscular System Development and Function
23	CBFB, CLINT1, CLTC, CTNNB1, CTNND1, FLNA, GIT2, HECTD1, HECTD4, KBTBD6, KIF1B, KIF5C, KLHL9, PAK1, PPFIA1, PTPN14, RAD50, RAE1, RINT1, SCYL2, SH2B1, SVIL, TSC1, TSC2, YAP1, YWHAG	11	16	Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Developmental Disorder
24	ACKR3, ADRB2, AP1S1, ATOH1, ATP11A, BCDIN3D, C15orf59, CACNA1E, CCNE2, CDKL5, CEMIP, Ctbp, EED, EHMT2, EZH2, FOXJ3, GPR161, HIC1, IL6R, LCN2, LYPD6B, MECP2, mir-145, miR-122-5p (miRNAs w/seed GGAGUGU), NCOA7, NOTCH2, PHF1, PKMYT1, PLA2G4A, PRDM5, RCOR1, SFXN3, SLC7A11, SOX10, STEAP3	10	18	Cancer, Organismal Injury and Abnormalities, Respiratory Disease
25	ABLIM1, AIFM2, ASAP1, B4GALNT1, CLDN1, CLDN7, CNOT3, DKK1, ERBB3, FBLN1, FGF17, HEPACAM, HSF1, HSF2, ITGB5, LRIG1, LRP4, LTA4H, MGEA5, NNMT, NRG1, NSDHL, PDZD2, PI3Kp85, PROM1, RAB5C, RBM10, SHC1, SLC5A3, TENM1, THRB, TIMP2, TSPAN12, ZHX1, ZHX3	10	18	Cell Cycle, Cancer, Cellular Movement
Heroin vs. Control				
1	AKAP11, BCAS1, C9orf72, CBY1, CDK5R1, CELF1, CHD8, CLASP2, CTNNB1, DDX17, DKK3, GEMIN4, HNRNPDL, HNRNPU, HUWE1, MAGI1, NCKAP1, NCOA2, NF2, NFASC, Pka catalytic subunit, PLS3, PPARD, RAB1A, RBBP6, SF3B1, SLC12A6, TCERG1, TCF, TNIK, TOB2, TSC1, TSC22D1, USP9X, WASF2	39	33	Embryonic Development, Organismal Development, Nervous System Development and Function
2	ACOT8, ADD3, ADGRG1, AKR1B10, ANLN, BACH1, BANP, CHCHD6, CREBBP, DDX3X, DNMT1, EHMT2, GRSF1, Histone h3, IMMT, JMJD1C, KMT2E, MBD1, mediator, NSUN2, OPA1, PDE2A, PI3K (family), RASGRF2, RNF14, Rnr, SEZ6L2, SREBF1, SRRM2, STOM, TCF12, VPS39, WDR1, YME1L1, ZNF652	35	31	Cancer, Organismal Injury and Abnormalities, Cell Morphology
3	AKAP9, AMFR, ANKS1B, BRAP, CHD4, CSDE1, DLG4, Gamma tubulin, GATAD2B, Gcn5l, Hdac, IFRD1, ING1, Jnk, KDM5C, KLF6, MAP4K5, MAX, MFN2, OLA1, PDE4DIP, PDGF BB, PHF12, RBBP4, RGS10, SAP30, SEPT9, TAB2, TPPP, TUBGCP4, TUBGCP5, Ubiquitin, ZBTB45, ZNF532, ZNF592	31	29	Cancer, Organismal Injury and Abnormalities, Reproductive System Disease
4	AQP4, BAG4, BCR, BTRC, CSNK2A2, EIF4B, FBXW11, KDM2A, MCL1, MIB2, MTORC1, NFkB (complex), Pka, Pld, PP2A, PRKAA, PRKAA1, PTPRS, Rap1, RAPGEF1, RASSF5, RPS6KA1, RUSC2, SIRT6, SIVA1, SORL1, STIM1, STK24, TLE1, TNFSF13, TNIP1, TNPO2, TRAF7, ZC3H18, ZNF385A	29	28	Cell Death and Survival, Developmental Disorder, Hereditary Disorder
5	ABLIM1, AKAP12, Alpha tubulin, ASXL1, ATRX, CAV1, DCAF8, DHX34, E2f, ELP2, FGFR3, FHL1, GMNN, Gsk3, HIF1A, Histone h4, HNRNPUL1, HSF1, Hsp70, Hsp90, HSPH1, NCAM1, NLGN2, PARK7, PARP, PDK2, PLXNC1, PRKACB, PRMT5, PTGES3, PTOV1, RPA1, SMC1A, STAT2, TOP2B	29	28	Cancer, Neurological Disease, Organismal Injury and Abnormalities
6	ADAM15, Alpha catenin, ARF1, ARHGAP5, CDH2, Cpla2, CTNND1, DDR1, DTNA, ERK1/2, FLOT1, Focal adhesion kinase, FYN, GAS6, Igm, KCNIP3, Mlc, NGF, PDGFRA, PEA15, PI3K p85, PRR7, PRUNE1, PTPN11, PTPRB, PTPRZ1, RASA1, RGS5, RLIM, SET, SLC8A1, SRC (family), STAM, TOM1L1, USP8	27	27	Cellular Movement, Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization
7	Akt, ARAP1, ARNT, BCR (complex), CADM1, CCDC88A, CCND3, CSE1L, Cyclin A, DCC, DNASE1, Erm, F Actin, FBXO7, GSN, HSP90AB1, IFNGR1, Immunoglobulin, KIF1B, LIG1, NISCH, NOLC1, p85 (pik3r), PFKFB2, POLD1, POLDIP2, Ppp2c, PREP, PTTG1, SEC14L2, SERBP1, SOCS5, SPHK2, SYNM, ZEB2	27	27	Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities
8	ABCC4, ABCD3, Actin, ASCC2, B4GALT6, BCL2L13, CD3, DBN1, ETV1, FOXP1, GAB2, GAS8, GLUD1, Growth hormone, Interferon alpha, LMNB1, Mek, MXI1, NCK2, NETO2, PAPD7, PI3K (complex), PIK3R3, PPM1K, PRKCQ, RAS, RDX, RNA polymerase II, SLC7A1, SMAD2, STAT5a/b, TCR, TRIM22, WIPF1, WNK1	24	25	Cellular Compromise, Hypersensitivity Response, Inflammatory Response
9	ADAR, Ap1, ASAP2, ATF2, BIN1, CCNA1, Cg, Creb, DUSP1, ERK, G6PD, GABRG2, GAPDH, GCLC, Hsp27, ILF3, ITGA2, JINK1/2, LDL, LRP8, MAP2K6, MAP4K4, MYEF2, NEU4, Nfat (family), NR3C2, P38 MAPK, Pkc(s), PLAT, PPP1R12A, SARM1, TRIM27, USP15, Vegf, WAC	22	24	Cell Death and Survival, Neurological Disease, Organismal Injury and Abnormalities
10	26s Proteasome, ATP6V0E1, ATP6V1H, BACE1, Ck2, CLCN7, CTSF, DCP1A, DEK, EIF4ENIF1, FUBP1, GNS, HEXA, IPO8, LAMP1, MCOLN1, OS9, P-TEFb, PI4KA, POLR2B, POLR2F, POLR2G, POLR2I, POLR2K, PSAP, RTN4, SEC16A, SMARCE1, SORT1, SSFA2, TCOF1, TFEB, TMEM8B, TRIP12, XRN2	18	21	Developmental Disorder, Hereditary Disorder, Metabolic Disease
11	ADGRG1, AKAP12, ALPL, ARL4C, BNIP3L, CAP2, CASP4, CDK16, COPA, DUSP9, FSH, HS6ST2, HSD11B1, IL6, KIDINS220, Lh, MAP4K4, MYRF, P4HA2, PDE8A, PDXK, PPIH, PTPRF, RAB1A, RAB4A, RASAL2, RGS5, RGS12, SMARCD1, SNAP23, ST6GAL1, TET2, TLK1, TSC22D1, WT1	18	21	Cancer, Neurological Disease, Organismal Injury and Abnormalities
12	ABCC5, ACSS1, ACTR3B, ADAM22, AR, C1orf112, CHTF8, DENND5B, EXTL2, GPSM2, NR1D2, NUPR1, PHTF1, PPFIBP2, SLC6A6, SRF, ST6GALNAC6, THG1L, ZMYM3	17	16	Organ Development, Organ Morphology, Organismal Development
13	AR, ARCN1, BIRC2, CCND3, CDK5, CEND1, CNTN2, COPG1, DDX5, DUSP1, ETS2, FEM1B, FLI1, FOSL1, GCLC, GGCT, JUN, JUND, MIF, mir-34, MMP13, NBPF10 (includes others), NOCT, PIAS1, PIGA, PRKCD, PRKD1, PTPRD, RNF6, STIM1, TCF4, UBA1, UBQLN2, ZDHHC17, ZMIZ1	14	18	Cellular Growth and Proliferation, Connective Tissue Development and Function, Tissue Development
14	ABAT, AGO1, APOE, CUL7, CUL9, DAPK3, DSN1, EPS8, FBXW8, FRMD4A, GADD45, GMPS, GUCY1A1, HMGCS1, HMMR, KCNAB1, KIF23, LAMP2, MELK, PBK, PCBP4, POLD1, PRKAA2, PRKAB1, PTPRA, RABL6, SLC16A1, SLC6A1, TOP2A, TP53, TP53AIP1, TTK, UBR5, ZNF175, ZNF207	12	17	Behavior, Lipid Metabolism, Small Molecule Biochemistry
15	ARNTL2, CAMK2A, CHST1, CLUAP1, DUSP7, GAB2, GPR85, HAMP, HSPB11, IFT22, IFT27, IFT46, IFT52, IFT74, IFT80, IFT81, IFT88, IFT172, IL2, IL17RB, IL7R, INPP5A, LHX6, PEX1, PEX6, PEX26, PIK3R3, PROK2, PTPRT, SOX5, STAT3, TLK2, TRO, TTC26, TTC30B	12	17	Cell Signaling, Cell Morphology, Cellular Assembly and Organization
16	ADIPOR2, AMPD2, BRCA1, BTN2A1, CD209, CEP72, DPP6, DUSP10, EVL, GLB1, GPRIN1, HOPX, IL13, KCNK2, mir-506, miR-483-3p (miRNAs w/seed CACUCCU), MITF, MTSS1, PKP2, POLM, POLR3A, POLR3C, POLR3F, POU3F2, POU5F1, PRPF40A, RGS20, SEMA3C, SLC7A1, SLC8A1, TERT, TMEM106C, TNF, U2AF2, ZNF217	12	17	Cell Signaling, Molecular Transport, Small Molecule Biochemistry
17	ABCA3, ANKHD1/ANKHD1-EIF4EBP3, CCNT2, CDC42BPA, CTR9, DDX21, DISC1, DYNLL1, EHMT2, ELF5, ENAH, ERBB4, ESR1, FLCN, FNIP1, GORASP1, GPER1, GRK4, IQGAP1, KLK5, KRT18, LMO4, MAP1A, NCOA2, NME1, PGR, PHLDB1, RBFOX2, RRAGA, RRAGC, SMAD2, SMARCE1, TM4SF1, UBE3A, UBL3	11	16	Cellular Assembly and Organization, Cellular Function and Maintenance, Gene Expression
18	ACSL5, ADAM12, ADAM15, AGT, ATM, BRD4, C1orf54, CD63, CHD4, CMIP, DDIT3, GTF3C6, HFE, IFNG, KCNS3, KIFAP3, LOX, LOXL2, MAN2C1, MAPK10, MECP2, MICB, NFIC, NFIX, PDE4B, PIM2, PLAT, PSMB9, RBM3, SLC12A5, SLC19A1, SMARCA4, SPARCL1, SYTL4, UBD	11	16	Amino Acid Metabolism, Energy Production, Post-Translational Modification
19	ALDOA, ATP11A, CCNG1, CHMP7, CS, DHX40, DSTYK, EGLN, EGLN3, FAM117B, FOSL2, FOXJ3, GALNT10, GNPDA2, GYS1, mir-122, miR-122-5p (miRNAs w/seed GGAGUGU), NUMBL, PKM, PPP1R3E, RAB6B, SLC7A1, TMEM30A, TPD52L2, UBAP2, VIM, VPS4B	11	14	Cell Death and Survival, Infectious Diseases, Cancer
20	BARD1, CCAR1, CCL5, COL1A2, CPEB4, CSRNP2, CST5, CTDSP2, DAG1, GRIN1, HDAC1, HDAC2, IFIH1, ITGAV, MAP3K7, MAPK1, miR-29b-3p (and other miRNAs w/seed AGCACCA), NR3C1, PARP4, PAWR, POGK, PPARG, PRKCD, RERE, RNF38, RPL21, SMAD1, SOX11, SP1, SPPL2B, TCR, THAP1, TKFC, TP73, WDR26	10	15	Cancer, Cell Death and Survival, Organismal Injury and Abnormalities
21	ASCL1, CABLES1, CDKN1A, CPSF3, DAB2IP, DDX5, DHX8, ELAVL1, GPT2, HBG1, HDAC1, HMG20B, ID3, ING4, INTS1, INTS14, KAT7, MED15, NCBP1, OLIG1, OSBPL2, PHF21A, POLDIP3, POLR2A, RAD9A, SATB1, SET, SRSF2, TMEM2, TOP2A, USP22, WDR82, XPO1, ZNF451, ZNF592	10	15	RNA Post-Transcriptional Modification, Gene Expression, Cell Cycle
22	ACSS2, ARFIP1, BUB1, BUB1B, C5AR1, CENPE, CNTROB, DAAM2, DACT1, DVL2, FURIN, KLF6, LCMT1, MAPK8IP3, mir-17, mir-181, MKL1, MLXIP, MMP9, NCOA3, NDC80, NOP9, NRXN1, PPP2CA, PRKAA1, S100A4, SAP30BP, SCUBE3, SDC4, SH3KBP1, SPOCK1, TGFB1, TGM2, TTK, WWOX	10	15	Cell Death and Survival, Cell Cycle, Cellular Movement
23	ABCA5, ABLIM1, ADRB2, ANK3, CD44, CLDN7, CST5, CTSB, DENND5A, DOCK9, EPCAM, IL10, KDM1B, KLRC4-KLRK1/KLRK1, MAGED1, MCU, MIF, MSN, NF2, PANX2, PCBP1, PIP4K2A, SERPINA1, SLC7A11, SLCO2A1, SMAD2, SSRP1, SUPT16H, SYT11, TMTC1, TSPAN5, TSPAN8, TWIST2, VCAN, WNT5A	10	15	Cellular Movement, Cancer, Organismal Injury and Abnormalities
24	AGTR1, AP3B2, C1QBP, CASP14, CD14, CNGA3, DDX50, EFR3A, ELOVL3, ERAP1, FBL, FGF7, HNRNPU, IRF2, JAKMIP3, LRP4, NME1, PABPC1, PABPC4, PAK5, PARP9, PPIG, PRPF4B, PSMB9, RPL28, SIK2, STAT1, STAU1, SUMO1, TAP1, TNFRSF1A, TNFRSF1B, TRADD, TUBB4A, VCP	10	15	Antigen Presentation, Protein Synthesis, Infectious Diseases
25	ACTR1A, AGO1, BECN1, BICD2, BLM, caspase, CKB, DCC, DUSP10, E2F1, FAAP100, FANCB, FANCF, FGFR3, G6PD, HNRNPUL2, ID3, KIF23, LRPPRC, MDC1, PIK3C3, POLD2, PRPSAP1, PTPN4, RNF38, SIVA1, STAG1, TP63, TP73, TP53AIP1, UHRF2, ULK1, WWP1, ZFYVE1, ZNF672	10	15	Cell Death and Survival, Cancer, Organismal Injury and Abnormalities
MA vs. Cocaine				
1	ANGPTL2, AP1S2, ARHGAP30, ARL16, C1orf54, CA14, CORO6, CPM, GPR83, HCN1, HS3ST1, HYI, INPP1, KCNS3, KIFAP3, LRMP, MARCH1, MFGE8, NECTIN1, NOSTRIN, NRIP3, OXCT1, PDP1, PHLDB1, SLAMF9, SLC35G2, SMARCA4, SRPX, STAMBPL1, STK33, TMCC3, TMEM117, TREM2, TRIM36, USP24	23	35	Cell-To-Cell Signaling and Interaction, Cellular Function and Maintenance, Inflammatory Response
2	ABCF2, ACO1, ALDOA, ATXN1, BHLHE41, CHKA, CUL7, CUL9, EIF3B, FAM76B, FBXL5, FBXW8, FHL1, GLYR1, HERC2, Hif1, HIF1A, HK2, KDM4B, MAPKAP1, METTL23, NAA10, NAE1, NEURL4, NPLOC4, NUCKS1, NUDCD2, PDK2, PLOD2, RAPGEF6, RBFOX2, SPACA9, USP20, USP33, UTP18	21	34	Cancer, Neurological Disease, Organismal Injury and Abnormalities
3	ANKRD50, APBB1IP, BACE1, DCP2, DDX17, EDF1, EPHA4, EXOSC4, HNRNPD, KCTD1, LCN2, MRAS, NASP, NET1, NR2F2, NRP1, PGF, PROX1, RASSF2, RASSF4, RIN1, RIN2, ROCK2, RPL34, RTN3, RTN4, RTN4IP1, SORT1, TIA1, TIAL1, UPP1, USP8, VEGF, WWC1, ZBED6	21	34	Cellular Growth and Proliferation, Nervous System Development and Function, Cell Morphology
4	ACTR2, CASKIN1, CCAR1, CDC7, CENPC, CSDC2, DENND4A, DNAJB4, DSN1, ELK4, GPT, HEPACAM, MINOS1, NELFE, NFIX, NPM1, NSL1, PCDHAC2, POLB, PPARGC1B, PRMT5, RNA polymerase II, RPS10, SIPA1L1, SP2, SSTR1, ST7, TCERG1, THOC1, THRB, UIMC1, URI1, WNT7B, ZNF268, ZNF451	21	34	Cellular Response to Therapeutics, Cell Cycle, Cell Morphology
5	ACTN4, AKAP8, ANAPC13, ANKRD17, AQR, C2CD5, CACNA1C, CACNB3, CACNB4, CCNA2, CDC16, CEP131, CNOT1, DAPK1, DST, E2f, EFHC1, FXR2, HNRNPA1, HNRNPH3, LRRC59, MATR3, OFD1, PKM, PTBP1, PUM1, PUM2, RNF14, RPTOR, SNRPD1, TFDP2, TRIM35, UNK, UXT, VKORC1L1	21	34	Cardiac Arteriopathy, Cardiovascular Disease, Organismal Injury and Abnormalities
6	ARHGAP4, ARHGAP35, ATP2A2, CCNY, CD55, CD151, CDK16, CITED1, COPB1, DAPK3, DUSP9, FSH, HBP1, KIDINS220, LMBRD2, MAMLD1, NLK, NRSN1, PLCL1, PLIN3, POP5, PPP2R5C, PPP3R1, PTP4A1, RASAL2, RGS7, RGS12, RNF138, SLC35C2, SLC43A2, SMARCD1, SYVN1, TMED9, TPPP, ZNF331	21	34	Cancer, Connective Tissue Development and Function, Dermatological Diseases and Conditions
7	AMPH, B3GNT9, BEX3, CACTIN, CAMK2D, CLEC11A, CPNE4, DIRAS1, GPR34, Ikb, IKBKG, LCA5, LDB2, NFkB (complex), OPTN, PASK, PDCD11, PKN3, PPP1R16B, PPP4R4, PTPRS, RAP1GDS1, RBCK1, RNF112, RTF1, SHARPIN, SYT6, TANK, TFG, TMEM14C, UBE2V1, ZC3H13, ZC3H18, ZDHHC3, ZNF385A	19	33	Cell Signaling, Infectious Diseases, Dermatological Diseases and Conditions
8	Akt, B4GALT5, BST1, CDH13, CHRNA4, CHRNB2, DGKD, GABBR2, GPAT3, LANCL2, LNPEP, MAGI2, MGLL, NDFIP1, NOLC1, OTUD3, p70 S6k, PDCD6, PFKFB2, PFKFB3, PIN4, PLSCR3, PRR5, PRR14, RPS6KB2, SIPA1, ST3GAL5, TBC1D4, TRIM24, TTC3, UBAP1, USP12, VPS28, VPS37A, VPS37B	19	33	Cellular Assembly and Organization, Cellular Function and Maintenance, Behavior
9	BATF2, BICD2, CASK, CCM2, CCNF, CCP110, DCTN1, DCTN2, Dlg, EPHX2, FBXO31, GAA, GOLGA2, GORASP1, ITGB1BP1, KDELR3, KIF13B, KRIT1, MAP4, MAP2K6, MAP3K3, MAP4K4, MAPRE3, MYEF2, P38 MAPK, PDCD10, PFDN2, PFDN6, SEC16A, SEC23A, SEC23B, SEC24B, TRAF7, TRIO, WNT4	19	33	Cancer, Cardiovascular Disease, Hereditary Disorder
10	ADD2, ADD3, ANKRD11, BANP, DMAP1, DNMT1, EHMT2, ENO3, Histone h3, HMGN1, HP1, ING5, KDM5C, LARP1B, MAGED2, MORF4L1, NDUFS2, NSD3, PCDHA4, PHF8, PNO1, PTPRR, RASGRF2, RCOR1, RELN, RGS10, SBF1, SEC31A, SHANK3, SRRM2, TFAM, TM4SF18, WIZ, ZBTB44, ZNF592	19	33	Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities
11	ANP32B, ATG13, DDX6, DHX30, EIF4E, EIF4ENIF1, Eif4g, FBXL19, GADD45, GIGYF2, HMGCS1, JPH1, KAT7, LSM7, LSM14A, LSM14B, MAF1, MED9, MED15, MED24, MTOR, NCBP1, PARN, PGBD5, PNPO, POLDIP3, RPS20, S100A2, SMG6, STRADA, SUPT6H, TPCN1, UPF3B, UVRAG, VPS39	19	33	Cellular Assembly and Organization, Cellular Function and Maintenance, Protein Synthesis
12	ADAM15, AEBP2, BCL2L13, BRF1, CARD9, CBX6, CERS2, CERS6, Ck2, CSE1L, CSNK2A1, CSNK2B, DIABLO, EED, FBXO9, HLX, IFN type 1, IRF5, JARID2, KDM2B, KIF1B, LEMD2, NUDT2, PACS1, PCGF6, PHC1, PHC2, PHF1, RNF2, SNAPC4, SNX19, SUZ12, TAB2, TELO2, TNFSF10	19	33	Cancer, Cell Death and Survival, Organismal Injury and Abnormalities
13	ARHGAP32, BACE2, BCL11A, BCLAF1, CCDC80, CDK4/6, CLIC6, Collagen type II, CUX1, DYNC1LI1, GBE1, GLS2, MBD4, MLH1, MYO7A, NCOA3, NSD2, PPFIA2, PRKCA, PYGB, RAB23, RBM5, RHOBTB3, RMDN3, RPL10, SAP30BP, SEC23IP, STXBP3, SZRD1, TNFRSF1B, TRAF1, UBA1, UBAP2L, VPS13D, YLPM1	19	33	Cancer, Organismal Injury and Abnormalities, Reproductive System Disease
14	ACADS, ADM, ARL4A, CTNND2, CTSH, CYP27A1, DYNC1I2, FBXL17, GUK1, HIPK2, HPN, IgG, KLK6, LGALS3, MT1L, MUC6, NRCAM, PCSK6, PLS3, PPCS, PTCH1, PTCH2, RETREG1, S100A13, SEZ6L2, SPINT1, SREBF1, SUFU, TCF, TRIM63, TSC22D1, TSC22D4, TXLNG, ULK3, ZYX	19	33	Cancer, Dermatological Diseases and Conditions, Hereditary Disorder
15	AAAS, ACACA, APAF1, APIP, ATF1, CACNA1D, CELF2, CHGA, COL5A3, Creb, DMD, ENC1, ETS2, FASN, FTH1, GPR101, HSPA4L, KCNA3, MAP2K7, MAPK7, MAPK9, METAP2, MTORC2, NFE2L2, NFYA, NFYB, NR0B1, NUBP1, NUBP2, RARG, RNASEH1, SEM1, SMPD2, SSTR3, TRAIP	19	33	Cell Death and Survival, Cellular Development, Cellular Growth and Proliferation
16	ABCA1, ADAMTS3, ADRA1D, CLDN1, CRB1, DNER, EDAR, GABRA5, GABRB2, HNRNPA2B1, IDS, IL2RG, IL9R, MEIS2, MFHAS1, MMD, NETO2, Nr1h, NR2F1, NTS, PDE4B, PITPNC1, RIMKLB, SCN9A, SET, SLC1A1, SNTA1, SSFA2, STAT5a/b, STOM, SULT1A3/SULT1A4, SYT1, TNS3, UGP2, UTRN	19	33	Psychological Disorders, Organismal Injury and Abnormalities, Neurological Disease
17	ABCG2, AGO2, BMP4, C11orf96, CALCOCO2, CAMTA1, CCSAP, CDC25B, CPSF7, Cyclin A, DCAF6, DCBLD2, DDX10, EFNA1, FAM98B, GLI1, GRSF1, HOPX, LAMA1, LZTS1, NAV3, NSUN5, NTM, PEG3, RBM4B, Rnr, SDAD1, SOX2, SRA1, SYNE1, TARBP2, THYN1, TMEM100, TTC13, ZCCHC9	19	33	Cancer, Organismal Injury and Abnormalities, Cell Cycle
18	ABI1, ANXA6, ARAP1, BAIAP2, BCAN, BLVRA, CAPN7, COL4A3BP, CYFIP2, EGFR, EPS8, EXOC4, FNBP1L, G protein alphai, GRM5, HARS, IST1, LRSAM1, MGAT5, MKL1, MTMR2, PIP5K1C, Pka catalytic subunit, PLPP1, PLSCR1, PSMB2, PTPRE, SBF2, SDF2L1, Shc, SPART, TNFRSF21, WASF1, WASF2, WASL	17	32	Cellular Assembly and Organization, Cell Morphology, Cellular Function and Maintenance
19	ADD1, APBB3, ARHGEF12, BLZF1, CCDC82, CRHR1, DXO, Eotaxin, ERAP1, ERP29, G protein beta gamma, GRK4, HRASLS2, L3MBTL1, MAPK1, MAPK3, MAST3, Metalloprotease, MX2, NMI, PAQR6, PARD3, PHF11, PNMA1, PRMT8, PRSS12, RPS6KA2, SHANK2, SLC4A7, SLIRP, SNX5, SPOCK1, TDRD7, TRANK1, UCN	17	32	Cellular Assembly and Organization, Cellular Development, Connective Tissue Development and Function
20	AKR1B10, ARC, ATXN7, CCAR2, CCNG2, CSDE1, EGR3, Gcn5l, GNB1, GNG7, Hdac, HNRNPH1, HNRNPR, ING1, KHDRBS3, KLF10, LRRN3, MAX, MNT, MT1E, MT1F, NDRG4, PI3K (family), PLCB2, RBBP4, SAP30, SAP130, SIN3A, SUPT3H, TADA3, TAF9, TAF10, TAF12, TRRAP, WDR26	17	32	Gene Expression, Developmental Disorder, Embryonic Development
21	AATF, ABLIM1, AP1G2, Arf, ARFGEF1, CHD7, CHD8, CHMP2A, FHL2, FKBP2, GNL3L, KANK1, KIF21A, KRT17, MAPK15, MBNL1, MDM2, MRPL41, NEDD4, PAK6, PEA15, PRKAR2A, RBBP6, RFFL, RPL23, Rsk, SATB2, SMOOTH MUSCLE ACTIN, STAM, STAMBP, UBE2D3, UBE2L3, UBE3A, USP2, USP42	17	32	Protein Degradation, Protein Synthesis, Developmental Disorder
22	ARID1A, ATM, BAG6, CENPJ, CYP7B1, DNA-PK, Dynein, EPB41, FAAP100, FANCC, FANCE, FANCG, GPN1, GSTP1, HOMER1, I kappa b kinase, LPIN1, MAPK10, MCRS1, MTUS2, MYRF, PBX1, PCLO, POLR2D, POLR2K, RECQL5, RIF1, RPA3, SYPL1, TBC1D9, TERT, TOP3A, TRIM13, VCP, ZNF281	17	32	DNA Replication, Recombination, and Repair, Cellular Assembly and Organization, Cellular Function and Maintenance
23	CAND1, CAPZB, CISH, CUL3, CUL5, DAZAP1, DCUN1D5, DNAJA1, ELOC, ENO2, EWSR1, HNRNPDL, Hsp70, Hsp90, KCNH2, KLHL12, KLHL22, LIMA1, LLGL1, LMNA, LMNB1, LUZP1, MYH10, PCMT1, PTPRA, RNF207, Sfk, SHC3, SHMT1, SPSB2, SRPK2, SRSF2, SYNPO, URB2, WDR82	17	32	Cellular Function and Maintenance, Post-Translational Modification, Cell Morphology
24	Alpha catenin, ANXA9, CA12, CBLL1, CDH4, CDH8, CLN8, CNNM1, COL4A2, COL4A5, COL9A2, CTNND1, DCAF8, DCHS1, estrogen receptor, FGFR3, IQSEC1, JPH3, JUP, MAN1A1, MAP1B, MMP15, MMP17, PCDH1, PCDH7, PCDH8, PCDH19, PCDHA5, PECAM1, PRDM2, PTPN14, RAP1GAP, Rock, SP5, TMEFF1	17	32	Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Connective Tissue Disorders
25	ACTL6A, ADA, ASF1A, ATRX, BAZ1A, BTRC, C7orf49, CASP8AP2, CHD3, DR1, FBXW11, G6PD, GJD2, HAT1, HIRA, Histone h4, HUWE1, KCNQ2, MCL1, MUTYH, N-cor, PRKDC, RASSF5, RBM4, REST, SIRT3, SMARCA1, SMARCC2, SRRM4, Top2, UBN1, USP37, USP47, WAC, ZBTB7A	17	32	DNA Replication, Recombination, and Repair, Cell Cycle, Cellular Assembly and Organization
MA vs. Heroin				
1	ABCB1, ABCG2, ACTN4, ANGPTL2, AP1S2, ARHGAP30, ARL16, C1orf54, CA14, DUSP13, GPR6, GPR68, HCN1, HOPX, INPP1, ITPR1, LHX5, LPXN, PDP1, PHLDB1, POLB, RAMP1, RNA polymerase II, SELENOP, SEMA7A, SLAMF9, Smad2/3, SMARCA4, SOX2, STAMBPL1, STK33, TMCC3, TREM2, TWF1, ZNF83	31	33	Drug Metabolism, Molecular Transport, Small Molecule Biochemistry
2	ARPC4, C11orf96, CA12, CCSAP, CDC42EP3, CDH8, CNNM1, COL4A5, COL9A2, CXCL12, Cyclin A, DARS, DCHS1, DOCK9, estrogen receptor, FHL1, GLI1, JPH3, KMT2D, LMO7, LZTS1, MAPK14, MFAP2, MKL1, MMP15, MMP17, NAV3, PCDH1, PCDH8, PCDH20, SGK1, SPOCK3, SSBP1, TCF4, TMEM100	31	33	Connective Tissue Disorders, Organismal Injury and Abnormalities, Cancer
3	AMPH, ANO3, BEX2, Bvr, CACTIN, CAMK2D, CLEC11A, CPNE4, DIRAS1, DNM1, GPR34, IKK (complex), KYNU, LDB2, MLKL, NFkB (complex), NHLH2, NLRX1, PELI3, PKN3, PPP4R4, PTPRS, RAP1GDS1, RNF31, RNF112, RTF1, SCARB1, SH3GLB2, SYT6, TFAM, TMEM14C, TYRO3, UBE2V1, USP11, ZDHHC3	29	32	Infectious Diseases, Cellular Development, Cellular Growth and Proliferation
4	ADM, AIM2, BIRC2, CD200, CDC42SE2, CISH, CK1, CYLD, F5, GLUD1, GRIA3, GTF2I, IFT46, IFT88, MDH1, NCK1, NFKB2, OTUD7B, ROCK2, RPL6, RPL17, RPS4X, SDCBP, STAU1, TANK, TCR, Tnf receptor, TNFRSF1B, TPI1, TRAF2, TRAF3, TYMP, UBA1, UBE2L3, VAV2	29	32	Inflammatory Response, Organismal Injury and Abnormalities, Embryonic Development
5	ADD1, APBB3, APOBEC3G, BCL11A, CTNND1, DCLK1, DEF6, DUSP9, ERP29, EXOC7, FGFR3, FSH, G protein alphai, GPRC5B, IGFBP7, KIDINS220, Lh, MAP2K1, MAPK1, MAPK3, MAST3, PAQR6, PHF11, PLIN3, POP5, PPFIA4, PPIH, PRMT8, QKI, RAP1GAP, RAP2B, RGS12, SHANK2, ZEB2, ZNF184	29	32	Cellular Assembly and Organization, Cell-To-Cell Signaling and Interaction, Behavior
6	ACVR2A, AQP3, BCL11B, BHLHE41, CCND3, Cdk, CDK14, CDKN1A, CDKN1B, COL10A1, Cyclin E, FBXO7, FLOT1, GPSM2, HDAC7, KLF4, KLF16, LBR, MARK2, MARK3, MEF2C, MYCN, NCEH1, PCGF3, PNPT1, PSAP, PYCARD, RFFL, RPS27L, SLC29A1, Smad1/5/8, TASP1, TIP60, TNFSF13, ZFYVE16	27	31	Hematological System Development and Function, Lymphoid Tissue Structure and Development, Organ Morphology
7	14-3-3, 26s Proteasome, ANKS1B, CHD7, CPSF2, DDX10, DYRK2, FARSB, GATA2, HDAC6, HMGB2, ISG20L2, MAPK15, MBD2, MBD3, MDM2, MFN1, MIIP, NOL6, OTUB1, PAK6, PDE9A, PSMD14, Rb, RBM4B, Rnr, RPS26, RPS15A, SATB2, THYN1, TOLLIP, UBE2E3, Ubiquitin, WIPI1, ZBTB45	25	30	Protein Trafficking, Cell Cycle, Gene Expression
8	ADRA1D, APH1A, ATP1A1, CHRM1, CLEC4A, CNIH2, CNIH3, Cpla2, CYP46A1, EDNRB, EFNB2, ERK1/2, FCGR1A, FLT1, Focal adhesion kinase, GRIA2, GRN, GRP, KCNH2, MAP4, MAP3K10, MGRN1, NEUROD1, NGF, Pak, PGF, PLPP2, PRKCG, PSENEN, PSMB10, Ras homolog, RBP4, SRC (family), VEGFA, VEGFB	23	29	Ophthalmic Disease, Organismal Injury and Abnormalities, Cell Cycle
9	ACAC, AGAP2, Akt, AMPK, B4GALT5, CAMKK2, CDK5, CHKA, CIB1, ELF1, F Actin, Fgfr, GABBR2, GRB10, HARS, HPCA, LANCL2, LCP1, LDB3, LETM1, MGLL, NCALD, NRF1, PIK3R2, PIP5K1C, Ppp2c, RAPGEF3, RNF7, SLC25A33, SPOCK1, SYNM, TRIM24, TTC3, UNC13D, USP12	23	29	Endocrine System Development and Function, Cell Morphology, Cancer
10	Alpha tubulin, BAG3, BATF2, BICD2, CAMK2G, CaMKII, CCM2, CCNF, CCP110, CENPJ, CLDN5, cytochrome-c oxidase, DCTN1, DCTN2, DLG4, DUSP2, Dynein, EPB41, FBXO31, GRIK2, GRIN1, HERC2, HTT, LPAR1, MAP4K4, MAPRE3, Mmp, P38 MAPK, RAP1A, RPL34, SORCS3, TIAL1, TJP2, TPPP, USP33	23	29	Cellular Assembly and Organization, Cellular Function and Maintenance, Cell-To-Cell Signaling and Interaction
11	ARC, ARHGEF4, ATP2B1, BAZ1A, CELF2, DAB2, DUSP16, EGR3, FOSB, GSTP1, HAT1, Hdac, HIRA, Histone h4, IPO4, Jnk, KLF10, LDLRAP1, LMTK2, MEF2D, MNT, MYO6, N-cor, NCDN, NDRG4, PDGF BB, PREX1, PRKCB, RGS10, SIRT3, SLCO1A2, Top2, TRPV6, TUBB2A, ZC3H12A	23	29	Neurological Disease, Organismal Injury and Abnormalities, Dermatological Diseases and Conditions
12	ARHGAP35, ARHGEF7, CAPZA1, CTTN, DBN1, EGR4, ELK1, EXTL2, Fcgr3, FHL2, Filamin, GAS8, GIT1, KDSR, KIF1C, KIF5B, LMCD1, MAP3K11, MFNG, Mlc, MPRIP, MYH9, NF2, NOTCH4, NR4A2, ODF2L, OLFM2, p70 S6k, PAK1, PI3K (complex), PLD2, SMOOTH MUSCLE ACTIN, SPTBN2, SRF, TIAM1	23	29	Cellular Assembly and Organization, Cellular Function and Maintenance, Cellular Movement
13	Actin, ACTL6A, ADAMTS10, ADCY, ADGRA3, AKAP5, BAP1, Calmodulin, CASK, CD40, COL1A2, Collagen Alpha1, DLG1, FBN1, FLI1, FOSL2, Gamma tubulin, GNB1, Iga, KCNQ3, KCNQ5, KIF13B, KLHL2, NEK6, NEK9, NET1, NPY1R, PSD3, REST, SIN3B, SMARCC2, SNAP25, SRRM4, TRAF5, TRIM13	23	29	Connective Tissue Disorders, Developmental Disorder, Hereditary Disorder
14	ARSB, Caspase 3/7, CDKN2C, DNAJB9, DOCK1, FAM120A, FASN, Gsk3, H2AFY, HEPACAM, IL6ST, MTORC1, MYH14, NPM1, PDK4, PI3K (family), PI3K p85, PRMT5, PROM1, Rac, RPS10, SIPA1L1, SLC2A1, SMPD2, SNX5, SREBF2, SSH3, SSTR1, STX1A, TCERG1, TERT, TFEB, THRB, USP2, WAC	23	29	Cellular Development, Cellular Growth and Proliferation, Cancer
15	ABCE1, ABI2, ACADS, CCDC6, CDK4/6, CHCHD3, CHCHD6, DAZAP1, DCBLD2, DYNC1LI1, ETV1, HIVEP2, HNRNPD, HNRNPF, HNRNPR, Hsp27, Hsp70, Hsp90, HSPB1, IMMT, ITSN2, KHDRBS3, LONP1, Mek, OXCT1, P-TEFb, PDLIM5, PPFIA2, PPP1CA, PPP1R35, RMDN3, RPS11, TJP1, TNPO1, WDR82	23	29	Cellular Assembly and Organization, Cancer, Organismal Injury and Abnormalities
16	ABI1, ADD2, AKIP1, ATF1, AURK, BAIAP2, BATF, CLSTN1, Creb, DNER, EPHA4, FAM212B, FGFR1, HES1, HIPK2, Histone h3, KRT17, MAGED2, MAP2K1/2, MBD1, NCKAP1, PHB, Pka catalytic subunit, PPP3CB, RELN, RPS6KA3, Rsk, SBF1, Secretase gamma, STOM, TIE1, TM4SF18, TRAIP, WASF1, WLS	22	28	Cell Morphology, Cellular Development, Cellular Growth and Proliferation
17	ABCC3, ALOX15, AUP1, CTNNA1, DVL1, ENC1, EPHA4, FZD7, Growth hormone, INTS5, INTS8, INTS10, LRRC47, MMD, NETO2, NFE2L2, OSBPL9, PEPCK, PKN1, PPP2R1A, PRDX1, PRKAG2, PSMB2, PTBP1, RAB10, RAB35, SLC35B2, SLC35C2, SLMAP, STAT5a/b, SYVN1, TWF2, UGP2, VAPB, YIF1A	22	28	RNA Post-Transcriptional Modification, Organ Morphology, Respiratory System Development and Function
18	BDNF, CAMK2A, CAMK2N1, CDK5R1, CYTH2, ERK, GAB1, GNA12, GRASP, Igm, IL27RA, LCP2, MADD, PDGFB, PLC, PPME1, PRKD1, PTP4A2, PTPN2, RANGAP1, Rap1, RAPGEF1, RAPGEF4, RASSF2, RASSF4, RGS3, RIN1, Rock, RRAS, RXRB, Sos, Tgf beta, VASP, VAV, WWC1	20	27	Cell-To-Cell Signaling and Interaction, Nervous System Development and Function, Cellular Movement
19	AGER, Alp, BCL2L1, calpain, CD47, CD63, CD82, COL5A3, Collagen type I, CTSH, Eotaxin, Fcgr2, FGR, FN1, Gm-csf, HLA-DR, IGSF8, Integrin alpha 3 beta 1, ITGAV, NCF1, NFkB (family), NFYB, OLR1, PADI2, PI4KA, RADIL, RNPS1, ROMO1, SH3KBP1, SIRPA, SLC3A2, SYTL4, Talin, TOB1, ZBTB7B	17	25	Cell-To-Cell Signaling and Interaction, Tissue Development, Cellular Movement
20	ARAP1, BCR, BCR (complex), c-Src, C19orf66, Cg, EPHB6, FBXO6, Fibrinogen, GRB2, HK2, HRH3, IFN Beta, IGLL1/IGLL5, IGSF1, IL12 (complex), Interferon alpha, ITGB2, LARGE1, MOB3C, p85 (pik3r), PCMT1, Pka, Pkc(s), PPP1R9B, PTPN6, RGS20, RPS14, SERPINB9, SH2B2, SLC4A2, SPI1, TJAP1, TYK2, UPP1	17	25	Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Humoral Immune Response
21	ACTR3B, B3GAT3, CEP170B, COA5, COQ10A, DPYSL5, FAM173B, GPCPD1, LARS2, MAFG, NCKIPSD, NUPR1, PODNL1, RFTN2, RNF19B, RTN4IP1, ST3GAL2	15	16	Metabolic Disease, Auditory Disease, Cardiovascular Disease
22	ABCA1, Ap1, CA11, CAMKK1, CD3, CD3 group, Cofilin, DGKZ, Erm, GLRX, HDL, hemoglobin, HLA-DQB1, HOMER2, IL2RG, Immunoglobulin, INPP5D, LDL, Mapk, MAPK8, NCAN, NDFIP2, NOS3, ORAI2, PIR, PLC gamma, PNP, PP2A, PRKAA, PRKCQ, PSRC1, RAS, RYR1, SPATS2, THY1	12	21	Cell-To-Cell Signaling and Interaction, Inflammatory Response, Cellular Development
23	ANP32B, AQP3, ATM/ATR, CAB39, CAMK2N2, CCND1, CPNE1, DAPK3, EIF4G1, EPHA6, EPHA7, EXOC1, FBXL19, IGFBP7, JPH1, MIF4GD, NPTN, NRXN1, PGBD5, PIH1D1, PPP1R7, RFC1, RFC2, RFC5, RIF1, RPA, RPAP3, SNHG5, STK11, STOM, STRADA, TP53, WASHC1, WASHC3, WASHC4	12	21	Tissue Morphology, Cancer, Gastrointestinal Disease
24	ACTA2, ACTR6, CD44, CHD3, CST5, CTSB, ESRP1, ESRRA, EZR, FLRT2, FN1, FRA10AC1, GAR1, GDA, HNRNPA2B1, HNRNPDL, ITGAV, MAP1S, MSN, MYCBP2, NF2, NHP2, NPAS2, NR2F1, PCBP1, PLAU, RTN3, RUNX1, RUNX2, SEPT3, SLC7A11, SYT7, TESC, VEGFA, VTI1A	11	20	Cell-To-Cell Signaling and Interaction, Cellular Movement, Cancer
25	APBB1, BAG3, BCLAF1, CAMTA2, CAND1, CCDC80, CD24, CUL3, DCTN4, DCUN1D5, DNAJB5, E2F6, FBXL7, FRYL, HELLS, JMJD1C, KANSL1, KATNA1, KATNB1, KLHL22, KMT2A, LDB1, MEIS1, NCOA3, PBX3, PDS5A, PHF10, PLPPR2, SDF2, SLC44A1, STYK1, TAF7, TAF12, TET1, USP47	11	20	Cancer, Organismal Injury and Abnormalities, Gene Expression
Cocaine vs. Heroin				
1	ACSL4, ADAM10, ANKRD13A, BCAN, CLDN2, CLTC, COL4A3BP, EGFR, GRM5, HARS, HERC1, HOOK1, IL6ST, LMO4, LRSAM1, MGAT5, MTMR2, OCRL, PI4KA, PSMB2, PSMB3, PTPN11, RAPH1, RUBCN, SCYL2, SPART, STAMBP, STAMBPL1, STX16, TBC1D16, TOM1L1, TOM1L2, UVRAG, VAMP4, VTI1A	25	35	Cellular Movement, Cellular Development, Lipid Metabolism
2	AGPAT1, COQ8A, CORO1C, CSRNP2, CTNNBL1, DNER, DUSP22, ELMOD1, ENDOG, GRIN1, GRIN2B, HDGF, LRRC8A, MAP4K3, MCF2, NR3C1, PAK6, PJA2, POGK, PRKAR1B, PSMG2, RERE, RNF38, RPL21, RRAGC, RTN4, RTN4IP1, SAP30BP, SERTAD2, SON, SPPL2B, TNFAIP1, UNC13B, WDR6, ZNF219	25	35	Inflammatory Disease, Organismal Injury and Abnormalities, Respiratory Disease
3	CACNB2, COL5A2, CP, DDAH1, DSE, ENPP5, FXR2, GABRA5, GABRB2, GCNT1, HNRNPA2B1, IDS, IGF2R, ITGA10, KCNAB2, LGALS3, M6PR, MEIS2, MEST, MFHAS1, MSRB3, NR2F1, PITPNC1, PLEKHA2, RABEP1, RASSF8, RIMKLB, SLC1A1, SLTM, SNAP25, STOM, SYT1, UTRN, WTAP, ZNF665	25	35	Cell Death and Survival, Cellular Compromise, Neurological Disease
4	ABCD2, AJAP1, BCL9L, CTNNB1, DDX17, DIO2, DKK3, EPHB3, FBXL5, GSKIP, LDHB, MAGI1, MARCH6, MINK1, MUC6, NEURL4, NPLOC4, OSBPL1A, PEG3, PKP4, PLS3, PTCH1, RAB7A, SLC12A4, SLC12A6, SNRK, TCF, TNIK, TOB2, TP53BP2, TSC22D1, TSC22D4, USP33, WBP2, ZMIZ2	23	34	Cancer, Neurological Disease, Organismal Injury and Abnormalities
5	ATRIP, CAPN15, CDC42BPG, CDCA4, CKS2, DAAM1, DZIP3, EIF4G1, EPS8, ERBB2, GART, GINS1, LAMP2, LIG1, LIG3, MAPK8IP3, MLXIP, PLXNB1, POLB, POLD1, POLK, POLR3B, RAD50, RFC1, RFC5, RINT1, RPA, RPA1, RRM1, SCG5, SMARCAL1, SMC1A, SPOCK1, TOP1MT, UNG	23	34	DNA Replication, Recombination, and Repair, Cancer, Gastrointestinal Disease
6	AEBP2, AMFR, ATF2, BAG6, BPTF, CELF2, DLG4, DUSP10, E2F5, EZH1, FLNB, GADD45G, GET4, INSIG1, JARID2, Jnk, LIN37, LIN52, MAP2K7, MAP4K5, MAP7D1, MFN1, MFN2, PRR7, RBBP4, RBL2, RFK, SEPT9, SFR1, SMARCA1, SNX19, SUZ12, TFDP1, UBA3, ZNF281	23	34	Cell-To-Cell Signaling and Interaction, Nervous System Development and Function, Connective Tissue Development and Function
7	AGO2, AMOT, CDH8, CDH10, CDH11, CLN8, CNNM1, COL4A2, COL9A2, DCHS1, DCP2, DDX6, DICER1, DOCK4, estrogen receptor, FGF12, GAR1, GEMIN4, GLUL, HMBOX1, MAP1B, PANK3, PCDH7, PCDH8, PCDH19, PDGFC, PRDM2, RBBP6, RTN1, SRA1, SYNE1, TARBP2, TGFB2, TMEFF1, ZNF550	23	34	Cancer, Gastrointestinal Disease, Hepatic System Disease
8	ASCC3, ATXN7, BRD8, CCNL2, CDK2AP2, CHD3, ELK4, EP400, ERCC8, FBXL19, GATAD2A, GATAD2B, GPT, KDM5A, MED1, MED15, MED20, MED23, MED24, MORF4L1, NBPF10 (includes others), PCDHAC2, PHF12, RNA polymerase II, SETD7, SRSF4, TAF8, TAF9, TAF10, THOC1, TRRAP, TSPYL1, ZNF451, ZNF532, ZNF592	23	34	Post-Translational Modification, Gene Expression, Developmental Disorder
9	AFF3, ARID5B, ATF6, ATG13, ATP2A2, BBX, C9orf72, CACNA1D, CELF1, CLCC1, CSNK1E, DCBLD2, EFNA3, EIF4E, EIF4EBP2, EIF4ENIF1, EPHA4, GAPDH, GSN, IRAK3, LDL, LMO7, MAPK9, NFASC, PLAT, PPP2R5A, PSD3, PSRC1, RAB1A, RIMS1, SMCR8, TCF4, TMEM64, ULK2, UNC13A	23	34	Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance
10	ADD2, ADD3, BANP, CBX1, CMTM5, CTBP1, DNMT1, EHMT2, FOXP4, Histone h3, HMG20A, HMGN1, HP1, ING1, KDM5C, NSD3, PCDHA4, PHF8, PKIB, RASGRF2, RCOR1, RELN, RGS6, SCRT1, SEC31A, SIRT7, SMARCAD1, SRRM2, TFAM, USP3, WDR1, WIZ, WLS, ZBTB44, ZNF420	21	33	Gene Expression, Hematological Disease, Cancer
11	AKAP8, APAF1, AQR, BAG4, CALD1, DAZAP1, DROSHA, EGLN1, GRAMD2B, HNRNPA1, HNRNPDL, HNRNPH1, HNRNPK, HNRNPL, Hsp70, Hsp90, ICE2, LLGL1, LONP2, LUZP1, MATR3, MEIS1, MYH10, NOS1, PBX1, PCMT1, PLXNC1, PTGES3, PTPRA, SIK2, SRPK2, TNPO1, TUBA8, VCP, XRN2	21	33	Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities
12	ANKRD50, ARID1A, ARL4C, ATRX, CASP8AP2, CRIM1, DAB2, DEK, ELP3, G6PD, Histone h4, HNRNPUL1, KCTD1, LMTK2, MB21D2, MCL1, MEF2D, MYO6, NASP, NRP1, PDGFRA, PRKDC, PRMT5, PROX1, SIRT3, SMARCC2, SMARCE1, ST7, TLE1, TNKS, Top2, TRIP12, WAC, ZBED6, ZBTB16	21	33	Gene Expression, Cell Death and Survival, Cellular Compromise
13	C17orf49, CHD8, CHD9, CREBBP, CYP19, GPBP1, HIRA, IFN Beta, IRF3, IRF9, KLHL2, KMT2A, MAF1, MAVS, MCRS1, NCOA1, NCOA2, NOCT, PAF1, PCBP2, SAP30, SERTAD1, SET, SLC1A2, SMG6, SNPH, SYMPK, TAC3, TCERG1, TEX10, TRIM9, TRIM36, UBE3C, URI1, YBX3	21	33	Gene Expression, Cell Morphology, Cellular Assembly and Organization
14	ARPC4, ATP2B1, ATP9A, BCAT2, BMPR1B, CDK14, CDK16, DUSP9, DYRK3, FOXN3, FSH, GNRH1, GPRC5B, KIDINS220, Lh, MAMLD1, MBD1, MBD2, MT1H, MT1X, MYRF, PDXK, POP5, PPP2R5C, PRKX, PTP4A1, PTPN4, PTPRM, PTPRN, RASAL2, RGS12, SMARCD1, STS, TLK1, WDR46	21	33	Cell-To-Cell Signaling and Interaction, Cancer, Dermatological Diseases and Conditions
15	ABI2, C2CD5, CAMSAP2, CCT7, CCT6A, CLASP1, CNOT1, COBL, DHX34, DNA-PK, DNMBP, EIF3A, HSF1, HSPA4L, LARP1, MAP7, NAP1L1, OS9, P-TEFb, PABPC4, PDLIM5, PPP2R2C, PTOV1, PUM2, RBM23, RPA3, RPL7A, RPTOR, SEC16A, SERPINH1, SLC5A3, SPEG, SSFA2, UNK, ZNF318	21	33	Cancer, Organismal Injury and Abnormalities, Gene Expression
16	AMPH, ANO3, B3GNT9, BEX3, CAMK2D, CPNE4, CYLD, FASTKD1, IKBKG, IKK (complex), KCNJ4, KDM2A, LCA5, MALT1, MTDH, NFkB (complex), P glycoprotein, PASK, PDCD11, PPP1R16B, PPP4R4, PTPRS, RBCK1, RNF31, RNF112, RUSC2, RYR2, SHARPIN, ST3GAL5, STK40, TNPO2, UBE2V1, UTP4, ZC3H18, ZNF385A	19	32	Cell Signaling, Dermatological Diseases and Conditions, Inflammatory Disease
17	BNIP3L, CDK5RAP3, DAG1, DNAJB4, EGR3, ELP2, EPRS, FER, GAB2, GFAP, GLIPR1, HSPA4, IARS, LARGE1, LARS, LIFR, MAP2K5, Mitochondrial complex 1, MXI1, NETO2, NFIC, NFIX, NUBPL, PEX1, PEX6, PLEC, POMGNT1, PTPN9, PTPRK, PTPRT, QKI, Sfk, SLC7A1, STAT3, STAT5a/b	19	32	Developmental Disorder, Hereditary Disorder, Neurological Disease
18	ANXA1, ATXN1, BATF2, BICD2, CASK, CCM2, DCTN1, Dlg, EPHX2, GAA, ITGB1BP1, ITSN1, KCNJ2, KDELR3, KRIT1, LRP8, MAP4, MAP2K6, MAP3K3, MAP4K4, MAPRE3, Mi2, MYEF2, NBR1, P38 MAPK, PTPN12, RBFOX2, RBPMS, SARM1, SORCS3, SQSTM1, TRAF7, TRIM27, TRIO, WDFY3	19	32	Cellular Assembly and Organization, Cellular Function and Maintenance, Cancer
19	ACIN1, ADD1, ARRDC2, BCL2L1, Calmodulin, CDC20, CFLAR, CPEB4, DNM1L, EEF2K, FKBP8, HRK, KCNQ2, KCNQ3, KLF5, LPAR1, LPAR3, MAP2, MFF, NFkB (family), PARK7, PARP, PNPT1, RAPGEF2, RBM25, RNPS1, ROMO1, RSF1, RTKN, SPTBN1, SRSF11, TJP2, USP9X, WWP1, ZNF148	19	32	Cellular Assembly and Organization, Cell Death and Survival, Hereditary Disorder
20	BACH1, BCLAF1, BUD31, CAPZA1, CCNH, CDK7, CDK5R1, CUL4B, CYTH1, DARS, DNAJB5, ERCC4, ERP29, FAIM2, FBXL7, FUBP1, GTF2F1, GTF2H1, IPO8, LSM6, NKTR, PARD3, PARD6A, PI3K (complex), PUF60, SCD5, SF3B1, SLC3A2, SLC7A8, SPTAN1, TFE3, TFIIH, TGOLN2, USP1, Wnt	19	32	Cell Cycle, Post-Translational Modification, Nervous System Development and Function
21	AKAP12, ASXL1, BOC, COL25A1, COL2A1, Cpla2, CSNK2A1, CSNK2A2, DYM, FAT1, GAS6, HERC2, HERC3, HR, KCNIP1, KDM2B, KDSR, LEMD2, NKX2-2, PCGF6, PGF, PHC1, PHC2, PREX2, PTPRZ1, RNF2, SOD3, SOX5, SRC (family), TENM1, TIAL1, UBE3A, UBQLN2, Vegf, YAF2	19	32	Connective Tissue Development and Function, Embryonic Development, Skeletal and Muscular System Development and Function
22	Alpha catenin, APC, CBLL1, CDH2, CTNND1, DACT1, DLG3, DVL2, EPB41L2, ETS1, FZD7, GOLGA4, HECTD1, IQSEC1, JUP, LPIN1, MACF1, MAP1LC3, MYO5A, PEG10, PKD1, PPP1R12A, PRKCA, PTPN23, RAB6A, RAB6B, RAP2C, RHOBTB3, Rock, SERBP1, STXBP3, TJP1, TRAK2, VPS13B, ZDHHC2	19	32	Cellular Assembly and Organization, Cellular Function and Maintenance, Cell-To-Cell Signaling and Interaction
23	AMPK, APPL1, ARF1, ARNT, B3GALNT2, BAP1, Calcineurin protein(s), CLDN1, CNR1, CREBZF, DDX3X, DLG1, EGR4, FBXL3, FOXK1, FOXO3, GPRASP1, HNRNPAB, HNRNPF, HNRNPU, KMT2E, LMNB2, MPP5, MPP7, NFAT (complex), NFATC1, NSUN2, PIK3CA, PRKAG1, PRR14L, RECQL4, RMDN3, SPAG9, SV2A, YBX1	19	32	Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance
24	ABTB1, ACLY, AMBRA1, CUL3, DAPK1, DGKZ, DSTYK, FERMT2, FTO, FUT8, Gm-csf, GPT2, HDAC6, hemoglobin, HSPD1, HSPE1, IMMT, KLHL20, LONP1, MAL, MARS, MGST1, PIR, PKM, PRKCB, PRKN, RAS, RASA2, RPS15, SATB1, SRCIN1, TGFBI, TMEM2, TMEM117, TRIM35	19	32	Energy Production, Nucleic Acid Metabolism, Small Molecule Biochemistry
25	AGK, ATP1A2, BMPR2, CCL25, CHAD, CHRM1, DCAF8, DGKD, ERK1/2, FGFR1, FGFR3, FRMD3, GLIPR2, GRM1, Hif1, HTR4, IL17RD, LITAF, LRRN1, MED28, PEA15, PLPP2, PTGFR, PTPRB, PTPRE, Rsk, RXFP3, SLC8A1, SMAD1/5, SMG1, STAM, SULF1, SULF2, USP8, WNK2	18	31	Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function

MA, methamphetamine; IPA, ingenuity pathway analysis