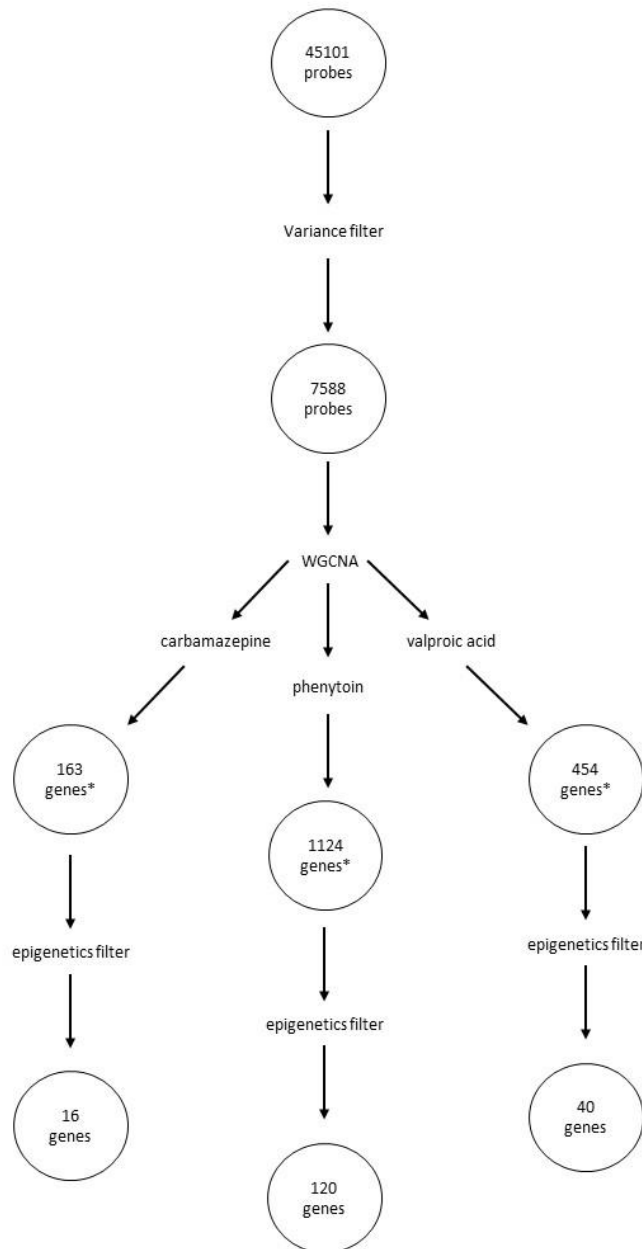
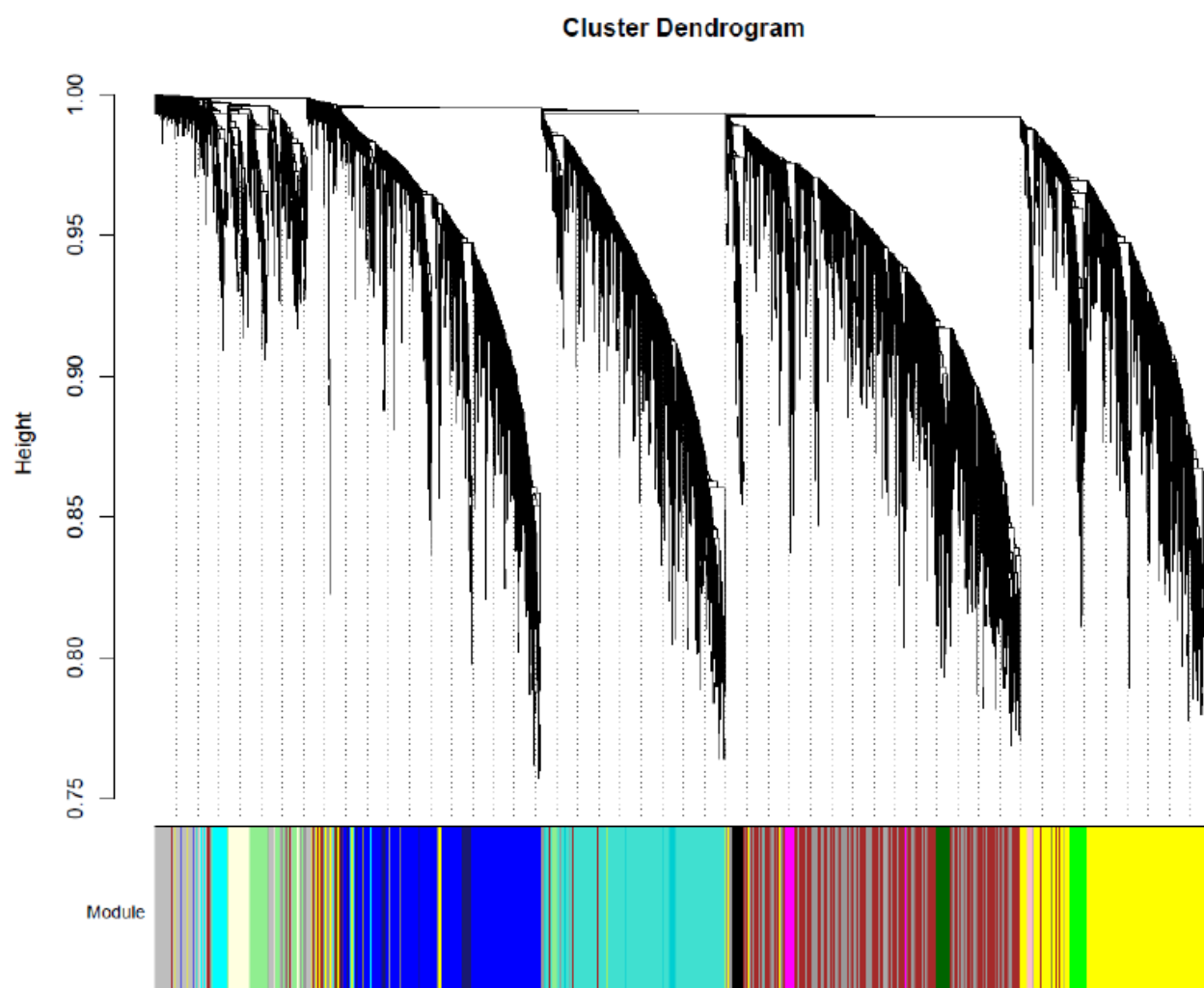


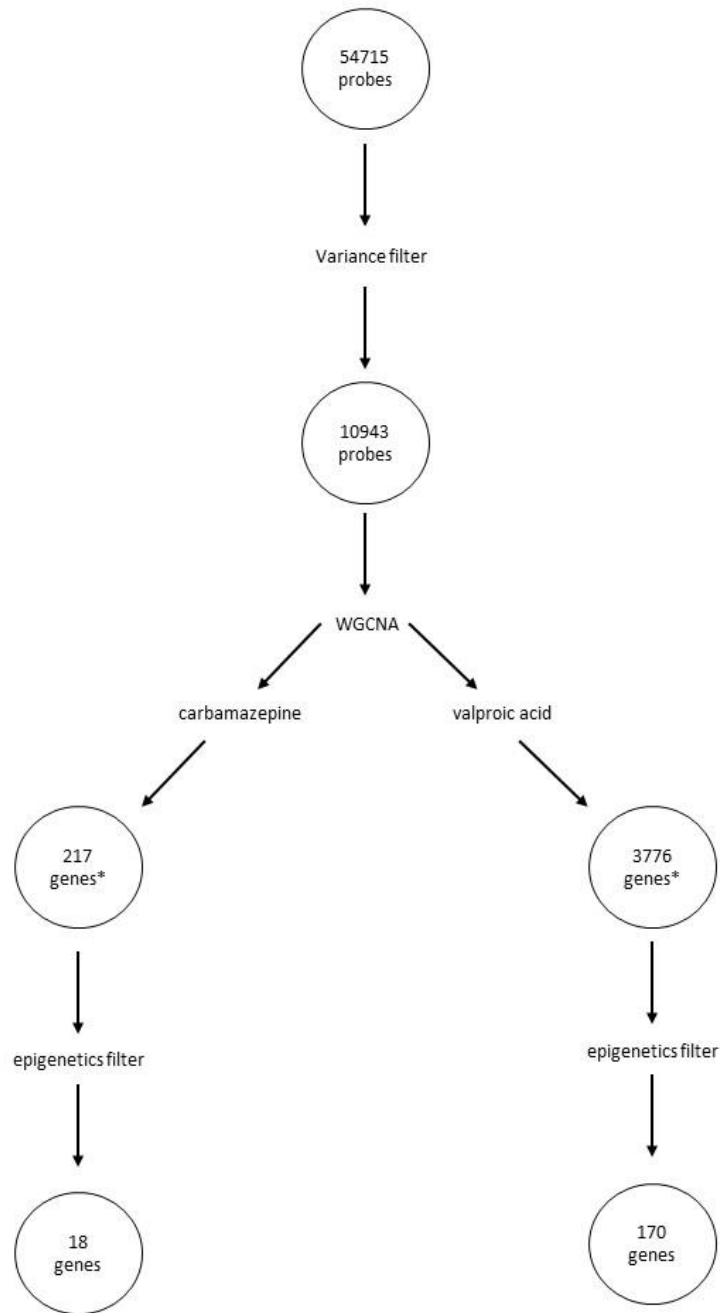
Supplementary Material



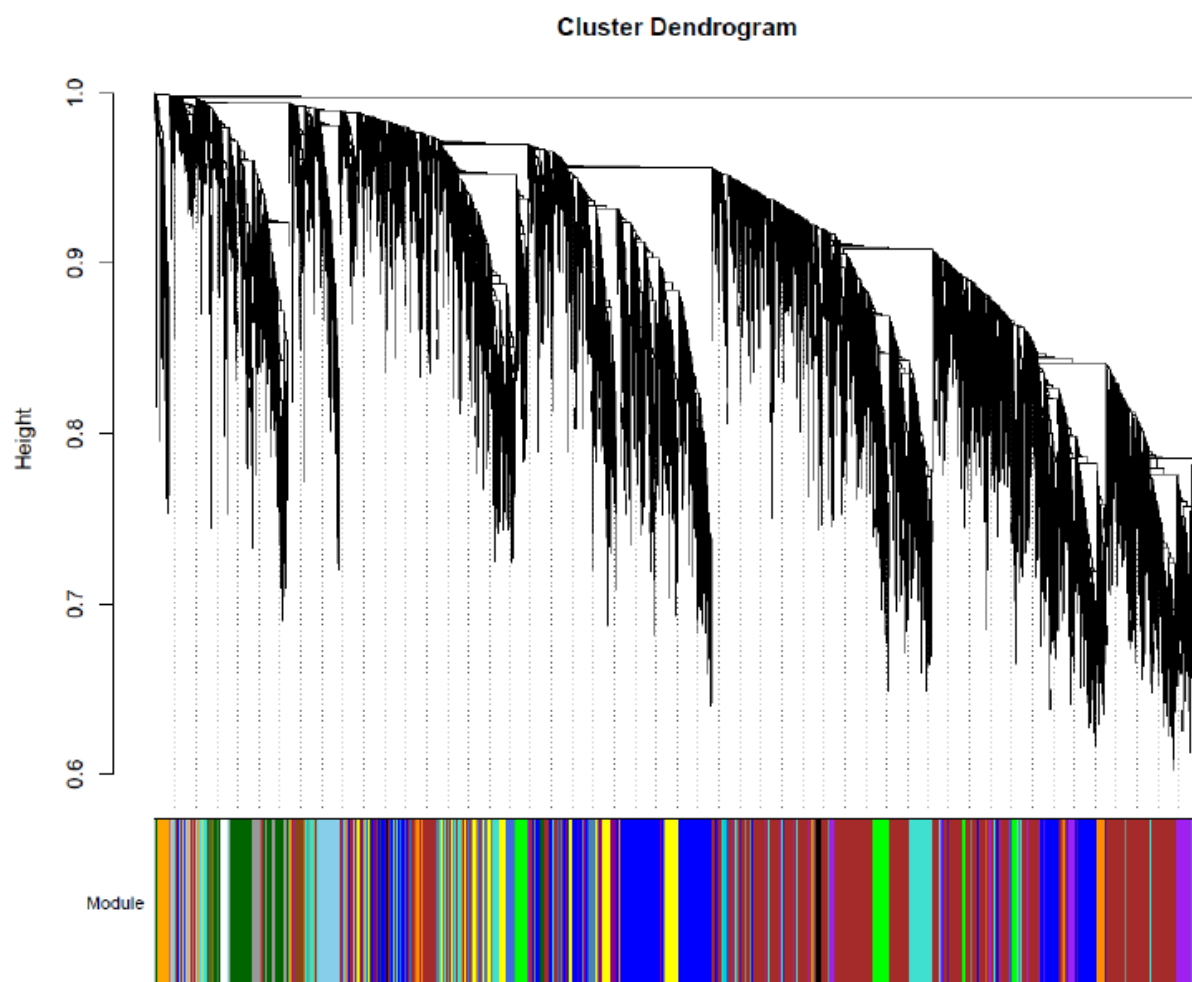
Supplementary Figure 1. Stepwise gene filtering in WGCNA analysis for mouse embryonic stem-cells (mESC) studies



Supplementary Figure 2. Consensus dendrogram for murine embryonic stem-cells (mESC) assays



Supplementary Figure 3. Stepwise gene filtering in WGCNA analysis for human embryonic stem-cells (hESC) study



Supplementary Figure 4. Consensus dendrogram for human embryonic stem-cells (hESC) assays

Supplementary Table 1. Clinical features of antiepileptic drugs induced teratogenic syndromes

Drug	Name of the Syndrome	Congenital Anomalies	Dose Dependency
Carbamazepine	ND	spina bifida cardiovascular anomalies cleft lip and cleft palate skeletal anomalies brain anomalies developmental delay	Unknown
		heart defects facial clefts digital hypoplasia short nose low nasal bridge hypertelorism abnormal ears wide mouth hypoplasia of distal phalanges and nails finger-like thumbs short or webbed neck abnormalities of growth delayed motor development developmental delay intrauterine growth retardation microcephaly	
Phenytoin	Fetal Hydantoin Syndrome (OMIM 617955)	neural tube defects preaxial limb defects heart defects liver defects oral clefts blepharoptosis nasolacrimal duct obstruction craniosynostosis hypospadias developmental delay autism Microcephaly	Above 1000mg/day
Valproic Acid	Fetal Valproate Syndrome (OMIM 609442)		

Supplementary Table 2. Gene Ontologies related to epigenetics mechanisms

GO	Description
GO:0000183	chromatin silencing at rDNA
GO:0000412	histone peptidyl-prolyl isomerization
GO:0000414	regulation of histone H3-K36 methylation
GO:0000415	negative regulation of histone H3-K36 methylation
GO:0000416	positive regulation of histone H3-K36 methylation
GO:0000451	rRNA 2'-O-methylation
GO:0000452	snoRNA guided rRNA 2'-O-methylation
GO:0000453	enzyme-directed rRNA 2'-O-methylation
GO:0001207	histone displacement
GO:0001208	histone H2A-H2B dimer displacement
GO:0001301	progressive alteration of chromatin involved in cell aging
GO:0001304	progressive alteration of chromatin involved in replicative cell aging
GO:0001305	progressive alteration of chromatin involved in chronological cell aging
GO:0001308	negative regulation of chromatin silencing involved in replicative cell aging
GO:0001510	RNA methylation
GO:0001672	regulation of chromatin assembly or disassembly
GO:0002127	tRNA wobble base cytosine methylation
GO:0002128	tRNA nucleoside ribose methylation
GO:0002129	wobble position guanine ribose methylation
GO:0002130	wobble position ribose methylation
GO:0002131	wobble position cytosine ribose methylation
GO:0002132	wobble position uridine ribose methylation
GO:0002938	tRNA guanine ribose methylation
GO:0002939	tRNA N1-guanine methylation
GO:0002940	tRNA N2-guanine methylation
GO:0002946	tRNA C5-cytosine methylation
GO:0003682	chromatin binding
GO:0004402	histone acetyltransferase activity
GO:0004407	histone deacetylase activity
GO:0006306	DNA methylation
GO:0006325	chromatin organization
GO:0006333	chromatin assembly or disassembly
GO:0006338	chromatin remodeling
GO:0006342	chromatin silencing
GO:0006343	establishment of chromatin silencing
GO:0006344	maintenance of chromatin silencing
GO:0006346	methylation-dependent chromatin silencing
GO:0006348	chromatin silencing at telomere
GO:0006479	protein methylation

GO:0006480 N-terminal protein amino acid methylation
GO:0006481 C-terminal protein methylation
GO:0006482 protein demethylation
GO:0008334 histone mRNA metabolic process
GO:0008469 histone-arginine N-methyltransferase activity
GO:0010216 maintenance of DNA methylation
GO:0010390 histone monoubiquitination
GO:0010424 DNA methylation on cytosine within a CG sequence
GO:0010425 DNA methylation on cytosine within a CNG sequence
GO:0010426 DNA methylation on cytosine within a CHH sequence
GO:0010452 histone H3-K36 methylation
GO:0010484 H3 histone acetyltransferase activity
GO:0010485 H4 histone acetyltransferase activity
GO:0010847 regulation of chromatin assembly
GO:0010848 regulation of chromatin disassembly
GO:0010964 regulation of chromatin silencing by small RNA
GO:0016569 covalent chromatin modification
GO:0016570 histone modification
GO:0016571 histone methylation
GO:0016572 histone phosphorylation
GO:0016573 histone acetylation
GO:0016574 histone ubiquitination
GO:0016575 histone deacetylation
GO:0016576 histone dephosphorylation
GO:0016577 histone demethylation
GO:0016578 histone deubiquitination
GO:0017136 NAD-dependent histone deacetylase activity
GO:0018011 N-terminal peptidyl-alanine methylation
GO:0018012 N-terminal peptidyl-alanine trimethylation
GO:0018013 N-terminal peptidyl-glycine methylation
GO:0018014 N-terminal peptidyl-methionine methylation
GO:0018015 N-terminal peptidyl-phenylalanine methylation
GO:0018016 N-terminal peptidyl-proline dimethylation
GO:0018019 N-terminal peptidyl-glutamine methylation
GO:0018020 peptidyl-glutamic acid methylation
GO:0018021 peptidyl-histidine methylation
GO:0018022 peptidyl-lysine methylation
GO:0018023 peptidyl-lysine trimethylation
GO:0018024 histone-lysine N-methyltransferase activity
GO:0018026 peptidyl-lysine monomethylation
GO:0018027 peptidyl-lysine dimethylation
GO:0018110 histone arginine kinase activity
GO:0018125 peptidyl-cysteine methylation
GO:0018181 peptidyl-arginine C5-methylation
GO:0018216 peptidyl-arginine methylation
GO:0018361 peptidyl-glutamine 2-methylation

GO:0018364 peptidyl-glutamine methylation
GO:0019701 peptidyl-arginine N5-methylation
GO:0019710 peptidyl-asparagine methylation
GO:0019716 N-terminal peptidyl-alanine monomethylation
GO:0019918 peptidyl-arginine methylation, to symmetrical-dimethyl arginine
GO:0019919 peptidyl-arginine methylation, to asymmetrical-dimethyl arginine
GO:0030466 chromatin silencing at silent mating-type cassette
GO:0030488 tRNA methylation
GO:0030561 RNA 2'-O-ribose methylation guide activity
GO:0030562 rRNA 2'-O-ribose methylation guide activity
GO:0030563 snRNA 2'-O-ribose methylation guide activity
GO:0030564 tRNA 2'-O-ribose methylation guide activity
GO:0030702 chromatin silencing at centromere
GO:0031048 chromatin silencing by small RNA
GO:0031055 chromatin remodeling at centromere
GO:0031056 regulation of histone modification
GO:0031057 negative regulation of histone modification
GO:0031058 positive regulation of histone modification
GO:0031059 histone deacetylation at centromere
GO:0031060 regulation of histone methylation
GO:0031061 negative regulation of histone methylation
GO:0031062 positive regulation of histone methylation
GO:0031063 regulation of histone deacetylation
GO:0031064 negative regulation of histone deacetylation
GO:0031065 positive regulation of histone deacetylation
GO:0031066 regulation of histone deacetylation at centromere
GO:0031067 negative regulation of histone deacetylation at centromere
GO:0031068 positive regulation of histone deacetylation at centromere
GO:0031078 histone deacetylase activity (H3-K14 specific)
GO:0031151 histone methyltransferase activity (H3-K79 specific)
GO:0031167 rRNA methylation
GO:0031445 regulation of heterochromatin assembly
GO:0031452 negative regulation of heterochromatin assembly
GO:0031453 positive regulation of heterochromatin assembly
GO:0031454 regulation of extent of heterochromatin assembly
GO:0031490 chromatin DNA binding
GO:0031493 nucleosomal histone binding
GO:0031497 chromatin assembly
GO:0031498 chromatin disassembly
GO:0031507 heterochromatin assembly
GO:0031508 pericentric heterochromatin assembly
GO:0031509 telomeric heterochromatin assembly
GO:0031935 regulation of chromatin silencing
GO:0031936 negative regulation of chromatin silencing
GO:0031937 positive regulation of chromatin silencing

GO:0031938 regulation of chromatin silencing at telomere
 GO:0031939 negative regulation of chromatin silencing at telomere
 GO:0031940 positive regulation of chromatin silencing at telomere
 GO:0032041 NAD-dependent histone deacetylase activity (H3-K14 specific)
 GO:0032121 meiotic attachment of telomeric heterochromatin to spindle pole body
 GO:0032129 histone deacetylase activity (H3-K9 specific)
 GO:0032259 Methylation
 GO:0032452 histone demethylase activity
 GO:0032453 histone demethylase activity (H3-K4 specific)
 GO:0032454 histone demethylase activity (H3-K9 specific)
 GO:0032775 DNA methylation on adenine
 GO:0032776 DNA methylation on cytosine
 GO:0032931 histone acetyltransferase activity (H3-K56 specific)
 GO:0033127 regulation of histone phosphorylation
 GO:0033128 negative regulation of histone phosphorylation
 GO:0033129 positive regulation of histone phosphorylation
 GO:0033169 histone H3-K9 demethylation
 GO:0033182 regulation of histone ubiquitination
 GO:0033183 negative regulation of histone ubiquitination
 GO:0033184 positive regulation of histone ubiquitination
 GO:0033522 histone H2A ubiquitination
 GO:0033523 histone H2B ubiquitination
 GO:0033553 rDNA heterochromatin
 GO:0033696 negative regulation of extent of heterochromatin assembly
 GO:0033697 positive regulation of extent of heterochromatin assembly
 GO:0033746 histone demethylase activity (H3-R2 specific)
 GO:0033749 histone demethylase activity (H4-R3 specific)
 GO:0034401 chromatin organization involved in regulation of transcription
 GO:0034647 histone demethylase activity (H3-trimethyl-K4 specific)
 GO:0034648 histone demethylase activity (H3-dimethyl-K4 specific)
 GO:0034649 histone demethylase activity (H3-monomethyl-K4 specific)
 GO:0034720 histone H3-K4 demethylation
 GO:0034721 histone H3-K4 demethylation, trimethyl-H3-K4-specific
 GO:0034729 histone H3-K79 methylation
 GO:0034739 histone deacetylase activity (H4-K16 specific)
 GO:0034770 histone H4-K20 methylation
 GO:0034771 histone H4-K20 monomethylation
 GO:0034772 histone H4-K20 dimethylation
 GO:0034773 histone H4-K20 trimethylation
 GO:0034968 histone lysine methylation
 GO:0034969 histone arginine methylation
 GO:0034970 histone H3-R2 methylation
 GO:0034971 histone H3-R17 methylation
 GO:0034972 histone H3-R26 methylation
 GO:0035033 histone deacetylase regulator activity
 GO:0035034 histone acetyltransferase regulator activity

GO:0035035 histone acetyltransferase binding
GO:0035041 sperm chromatin decondensation
GO:0035064 methylated histone binding
GO:0035065 regulation of histone acetylation
GO:0035066 positive regulation of histone acetylation
GO:0035067 negative regulation of histone acetylation
GO:0035092 sperm chromatin condensation
GO:0035173 histone kinase activity
GO:0035174 histone serine kinase activity
GO:0035175 histone kinase activity (H3-S10 specific)
GO:0035184 histone threonine kinase activity
GO:0035245 peptidyl-arginine C-methylation
GO:0035246 peptidyl-arginine N-methylation
GO:0035247 peptidyl-arginine omega-N-methylation
GO:0035327 transcriptionally active chromatin
GO:0035328 transcriptionally silent chromatin
GO:0035389 establishment of chromatin silencing at silent mating-type cassette
GO:0035390 establishment of chromatin silencing at telomere
GO:0035391 maintenance of chromatin silencing at silent mating-type cassette
GO:0035392 maintenance of chromatin silencing at telomere
GO:0035400 histone tyrosine kinase activity
GO:0035401 histone kinase activity (H3-Y41 specific)
GO:0035402 histone kinase activity (H3-T11 specific)
GO:0035403 histone kinase activity (H3-T6 specific)
GO:0035404 histone-serine phosphorylation
GO:0035405 histone-threonine phosphorylation
GO:0035406 histone-tyrosine phosphorylation
GO:0035407 histone H3-T11 phosphorylation
GO:0035408 histone H3-T6 phosphorylation
GO:0035409 histone H3-Y41 phosphorylation
GO:0035511 oxidative DNA demethylation
GO:0035512 hydrolytic DNA demethylation
GO:0035513 oxidative RNA demethylation
GO:0035518 histone H2A monoubiquitination
GO:0035521 monoubiquitinated histone deubiquitination
GO:0035522 monoubiquitinated histone H2A deubiquitination
GO:0035552 oxidative single-stranded DNA demethylation
GO:0035553 oxidative single-stranded RNA demethylation
GO:0035561 regulation of chromatin binding
GO:0035562 negative regulation of chromatin binding
GO:0035563 positive regulation of chromatin binding
GO:0035568 N-terminal peptidyl-proline methylation
GO:0035570 N-terminal peptidyl-serine methylation
GO:0035571 N-terminal peptidyl-serine monomethylation
GO:0035572 N-terminal peptidyl-serine dimethylation

GO:0035573 N-terminal peptidyl-serine trimethylation
 GO:0035574 histone H4-K20 demethylation
 GO:0035575 histone demethylase activity (H4-K20 specific)
 GO:0035616 histone H2B conserved C-terminal lysine deubiquitination
 GO:0035642 histone methyltransferase activity (H3-R17 specific)
 GO:0035978 histone H2A-S139 phosphorylation
 GO:0035979 histone kinase activity (H2A-S139 specific)
 GO:0035985 senescence-associated heterochromatin focus
 GO:0035986 senescence-associated heterochromatin focus assembly
 GO:0036123 histone H3-K9 dimethylation
 GO:0036124 histone H3-K9 trimethylation
 GO:0036205 histone catabolic process
 GO:0036206 regulation of histone gene expression
 GO:0036207 positive regulation of histone gene expression
 GO:0036208 negative regulation of histone gene expression
 GO:0036261 7-methylguanosine cap hypermethylation
 GO:0036265 RNA (guanine-N7)-methylation
 GO:0036351 histone H2A-K13 ubiquitination
 GO:0036352 histone H2A-K15 ubiquitination
 GO:0036353 histone H2A-K119 monoubiquitination
 GO:0036408 histone acetyltransferase activity (H3-K14 specific)
 GO:0036413 histone H3-R26 citrullination
 GO:0036414 histone citrullination
 GO:0036451 cap mRNA methylation
 GO:0039525 modulation by virus of host chromatin organization
 GO:0039699 viral mRNA cap methylation
 GO:0040029 regulation of gene expression, epigenetic
 GO:0040030 regulation of molecular function, epigenetic
 GO:0042037 peptidyl-histidine methylation, to form pros-methylhistidine
 GO:0042038 peptidyl-histidine methylation, to form tele-methylhistidine
 GO:0042054 histone methyltransferase activity
 GO:0042393 histone binding
 GO:0042799 histone methyltransferase activity (H4-K20 specific)
 GO:0042800 histone methyltransferase activity (H3-K4 specific)
 GO:0042826 histone deacetylase binding
 GO:0043035 chromatin insulator sequence binding
 GO:0043044 ATP-dependent chromatin remodeling
 GO:0043045 DNA methylation involved in embryo development
 GO:0043046 DNA methylation involved in gamete generation
 GO:0043156 chromatin remodeling in response to cation stress
 GO:0043189 H4/H2A histone acetyltransferase complex
 GO:0043414 macromolecule methylation
 GO:0043486 histone exchange
 GO:0043966 histone H3 acetylation
 GO:0043967 histone H4 acetylation
 GO:0043968 histone H2A acetylation

GO:0043969 histone H2B acetylation
GO:0043970 histone H3-K9 acetylation
GO:0043971 histone H3-K18 acetylation
GO:0043972 histone H3-K23 acetylation
GO:0043973 histone H3-K4 acetylation
GO:0043974 histone H3-K27 acetylation
GO:0043975 histone H3-K36 acetylation
GO:0043976 histone H3-K79 acetylation
GO:0043977 histone H2A-K5 acetylation
GO:0043978 histone H2A-K9 acetylation
GO:0043979 histone H2B-K5 acetylation
GO:0043980 histone H2B-K12 acetylation
GO:0043981 histone H4-K5 acetylation
GO:0043982 histone H4-K8 acetylation
GO:0043983 histone H4-K12 acetylation
GO:0043984 histone H4-K16 acetylation
GO:0043985 histone H4-R3 methylation
GO:0043987 histone H3-S10 phosphorylation
GO:0043988 histone H3-S28 phosphorylation
GO:0043989 histone H4-S1 phosphorylation
GO:0043990 histone H2A-S1 phosphorylation
GO:0043991 histone H2B-S14 phosphorylation
GO:0043992 histone acetyltransferase activity (H3-K9 specific)
GO:0043993 histone acetyltransferase activity (H3-K18 specific)
GO:0043994 histone acetyltransferase activity (H3-K23 specific)
GO:0043995 histone acetyltransferase activity (H4-K5 specific)
GO:0043996 histone acetyltransferase activity (H4-K8 specific)
GO:0043997 histone acetyltransferase activity (H4-K12 specific)
GO:0043998 H2A histone acetyltransferase activity
GO:0043999 histone acetyltransferase activity (H2A-K5 specific)
GO:0044012 histone acetyltransferase activity (H2A-K9 specific)
GO:0044013 H2B histone acetyltransferase activity
GO:0044014 histone acetyltransferase activity (H2B-K5 specific)
GO:0044015 histone acetyltransferase activity (H2B-K12 specific)
GO:0044016 histone acetyltransferase activity (H3-K4 specific)
GO:0044017 histone acetyltransferase activity (H3-K27 specific)
GO:0044018 histone acetyltransferase activity (H3-K36 specific)
GO:0044019 histone acetyltransferase activity (H3-K72 specific)
GO:0044020 histone methyltransferase activity (H4-R3 specific)
GO:0044022 histone kinase activity (H3-S28 specific)
GO:0044023 histone kinase activity (H4-S1 specific)
GO:0044024 histone kinase activity (H2A-S1 specific)
GO:0044025 histone kinase activity (H2B-S14 specific)
GO:0044026 DNA hypermethylation
GO:0044027 hypermethylation of CpG island

GO:0044028 DNA hypomethylation
 GO:0044029 hypomethylation of CpG island
 GO:0044030 regulation of DNA methylation
 GO:0044154 histone H3-K14 acetylation
 GO:0044382 CLRC ubiquitin ligase complex localization to heterochromatin
 GO:0044648 histone H3-K4 dimethylation
 GO:0044725 chromatin reprogramming in the zygote
 GO:0044726 protection of DNA demethylation of female pronucleus
 GO:0044727 DNA demethylation of male pronucleus
 GO:0044728 DNA methylation or demethylation
 GO:0045129 NAD-independent histone deacetylase activity
 GO:0045798 negative regulation of chromatin assembly or disassembly
 GO:0045799 positive regulation of chromatin assembly or disassembly
 GO:0045814 negative regulation of gene expression, epigenetic
 GO:0045815 positive regulation of gene expression, epigenetic
 GO:0045857 negative regulation of molecular function, epigenetic
 GO:0045858 positive regulation of molecular function, epigenetic
 GO:0046811 histone deacetylase inhibitor activity
 GO:0046895 N-terminal peptidyl-isoleucine methylation
 GO:0046896 N-terminal peptidyl-leucine methylation
 GO:0046897 N-terminal peptidyl-tyrosine methylation
 GO:0046969 NAD-dependent histone deacetylase activity (H3-K9 specific)
 GO:0046970 NAD-dependent histone deacetylase activity (H4-K16 specific)
 GO:0046972 histone acetyltransferase activity (H4-K16 specific)
 GO:0046974 histone methyltransferase activity (H3-K9 specific)
 GO:0046975 histone methyltransferase activity (H3-K36 specific)
 GO:0046976 histone methyltransferase activity (H3-K27 specific)
 GO:0048096 chromatin-mediated maintenance of transcription
 GO:0050838 peptidyl-5-hydroxy-L-lysine trimethylation
 GO:0051567 histone H3-K9 methylation
 GO:0051568 histone H3-K4 methylation
 GO:0051569 regulation of histone H3-K4 methylation
 GO:0051570 regulation of histone H3-K9 methylation
 GO:0051571 positive regulation of histone H3-K4 methylation
 GO:0051572 negative regulation of histone H3-K4 methylation
 GO:0051573 negative regulation of histone H3-K9 methylation
 GO:0051574 positive regulation of histone H3-K9 methylation
 GO:0051864 histone demethylase activity (H3-K36 specific)
 GO:0060820 inactivation of X chromosome by heterochromatin assembly
 GO:0060821 inactivation of X chromosome by DNA methylation
 GO:0060906 negative regulation of chromatin silencing by small RNA
 GO:0061085 regulation of histone H3-K27 methylation
 GO:0061086 negative regulation of histone H3-K27 methylation
 GO:0061087 positive regulation of histone H3-K27 methylation
 GO:0061186 negative regulation of chromatin silencing at silent mating-type cassette
 GO:0061187 regulation of chromatin silencing at rDNA

GO:0061188 negative regulation of chromatin silencing at rDNA
GO:0061628 H3K27me3 modified histone binding
GO:0061638 CENP-A containing chromatin
GO:0061641 CENP-A containing chromatin organization
GO:0061644 protein localization to CENP-A containing chromatin
GO:0061647 histone H3-K9 modification
GO:0061649 ubiquitin modification-dependent histone binding
GO:0061715 miRNA 2'-O-methylation
GO:0061866 negative regulation of histone H3-S10 phosphorylation
GO:0061922 histone propionyltransferase activity
GO:0062060 NuA4 histone acetyltransferase complex binding
GO:0062072 H3K9me3 modified histone binding
GO:0070076 histone lysine demethylation
GO:0070077 histone arginine demethylation
GO:0070078 histone H3-R2 demethylation
GO:0070079 histone H4-R3 demethylation
GO:0070475 rRNA base methylation
GO:0070476 rRNA (guanine-N7)-methylation
GO:0070510 regulation of histone H4-K20 methylation
GO:0070511 negative regulation of histone H4-K20 methylation
GO:0070512 positive regulation of histone H4-K20 methylation
GO:0070535 histone H2A K63-linked ubiquitination
GO:0070537 histone H2A K63-linked deubiquitination
GO:0070544 histone H3-K36 demethylation
GO:0070577 lysine-acetylated histone binding
GO:0070611 histone methyltransferase activity (H3-R2 specific)
GO:0070612 histone methyltransferase activity (H2A-R3 specific)
GO:0070734 histone H3-K27 methylation
GO:0070775 H3 histone acetyltransferase complex
GO:0070827 chromatin maintenance
GO:0070828 heterochromatin organization
GO:0070829 heterochromatin maintenance
GO:0070868 heterochromatin organization involved in chromatin silencing
GO:0070869 heterochromatin assembly involved in chromatin silencing
GO:0070870 heterochromatin maintenance involved in chromatin silencing
GO:0070901 mitochondrial tRNA methylation
GO:0070919 production of siRNA involved in chromatin silencing by small RNA
GO:0070921 regulation of production of siRNA involved in chromatin silencing by small RNA
GO:0070923 siRNA loading onto RISC involved in chromatin silencing by small RNA
GO:0070924 heterochromatin assembly involved in chromatin silencing by small RNA
GO:0070932 histone H3 deacetylation
GO:0070933 histone H4 deacetylation
GO:0070988 Demethylation
GO:0070989 oxidative demethylation
GO:0071044 histone mRNA catabolic process

GO:0071110 histone biotinylation
 GO:0071168 protein localization to chromatin
 GO:0071169 establishment of protein localization to chromatin
 GO:0071207 histone pre-mRNA stem-loop binding
 GO:0071208 histone pre-mRNA DCP binding
 GO:0071440 regulation of histone H3-K14 acetylation
 GO:0071441 negative regulation of histone H3-K14 acetylation
 GO:0071442 positive regulation of histone H3-K14 acetylation
 GO:0071557 histone H3-K27 demethylation
 GO:0071558 histone demethylase activity (H3-K27 specific)
 GO:0071572 histone H3-K56 deacetylation
 GO:0071891 N-terminal peptidyl-proline dimethylation involved in translation
 GO:0071894 histone H2B conserved C-terminal lysine ubiquitination
 GO:0072354 histone kinase activity (H3-T3 specific)
 GO:0072355 histone H3-T3 phosphorylation
 GO:0072370 histone H2A-S121 phosphorylation
 GO:0072371 histone kinase activity (H2A-S121 specific)
 GO:0080009 mRNA methylation
 GO:0080111 DNA demethylation
 GO:0080182 histone H3-K4 trimethylation
 GO:0080188 RNA-directed DNA methylation
 GO:0090052 regulation of chromatin silencing at centromere
 GO:0090053 positive regulation of chromatin silencing at centromere
 GO:0090054 regulation of chromatin silencing at silent mating-type cassette
 GO:0090055 positive regulation of chromatin silencing at silent mating-type cassette
 GO:0090115 C-5 methylation on cytosine involved in chromatin silencing
 GO:0090116 C-5 methylation of cytosine
 GO:0090124 N-4 methylation of cytosine
 GO:0090223 chromatin-templated microtubule nucleation
 GO:0090239 regulation of histone H4 acetylation
 GO:0090240 positive regulation of histone H4 acetylation
 GO:0090241 negative regulation of histone H4 acetylation
 GO:0090308 regulation of methylation-dependent chromatin silencing
 GO:0090309 positive regulation of methylation-dependent chromatin silencing
 GO:0090310 negative regulation of methylation-dependent chromatin silencing
 GO:0097043 histone H3-K56 acetylation
 GO:0097044 histone H3-K56 acetylation in response to DNA damage
 GO:0097198 histone H3-K36 trimethylation
 GO:0097309 cap1 mRNA methylation
 GO:0097310 cap2 mRNA methylation
 GO:0097355 protein localization to heterochromatin
 GO:0097372 NAD-dependent histone deacetylase activity (H3-K18 specific)
 GO:0097424 nucleolus-associated heterochromatin
 GO:0097549 chromatin organization involved in negative regulation of transcription
 GO:0097676 histone H3-K36 dimethylation
 GO:0097692 histone H3-K4 monomethylation

GO:0097725 histone H3-K79 dimethylation
GO:0098532 histone H3-K27 trimethylation
GO:0098578 condensed chromatin of inactivated sex chromosome
GO:0099077 histone-dependent DNA binding
GO:0099114 chromatin silencing at subtelomere
GO:0106004 tRNA (guanine-N7)-methylation
GO:0106005 RNA 5'-cap (guanine-N7)-methylation
GO:0106077 histone succinylation
GO:0106078 histone succinyltransferase activity
GO:0106153 phosphorylated histone binding
GO:0110002 regulation of tRNA methylation
GO:0110003 regulation of tRNA C5-cytosine methylation
GO:0110004 positive regulation of tRNA methylation
GO:0110005 positive regulation of tRNA C5-cytosine methylation
GO:0120049 snRNA (adenine-N6)-methylation
GO:0120186 negative regulation of protein localization to chromatin
GO:0120187 positive regulation of protein localization to chromatin
GO:0140034 methylation-dependent protein binding
GO:0140068 histone crotonyltransferase activity
GO:0140069 histone butyryltransferase activity
GO:1900049 regulation of histone exchange
GO:1900050 negative regulation of histone exchange
GO:1900051 positive regulation of histone exchange
GO:1900109 regulation of histone H3-K9 dimethylation
GO:1900110 negative regulation of histone H3-K9 dimethylation
GO:1900111 positive regulation of histone H3-K9 dimethylation
GO:1900112 regulation of histone H3-K9 trimethylation
GO:1900113 negative regulation of histone H3-K9 trimethylation
GO:1900114 positive regulation of histone H3-K9 trimethylation
GO:1901314 regulation of histone H2A K63-linked ubiquitination
GO:1901315 negative regulation of histone H2A K63-linked ubiquitination
GO:1901316 positive regulation of histone H2A K63-linked ubiquitination
GO:1901535 regulation of DNA demethylation
GO:1901536 negative regulation of DNA demethylation
GO:1901537 positive regulation of DNA demethylation
GO:1901538 changes to DNA methylation involved in embryo development
GO:1901674 regulation of histone H3-K27 acetylation
GO:1901675 negative regulation of histone H3-K27 acetylation
GO:1901676 positive regulation of histone H3-K27 acetylation
GO:1901725 regulation of histone deacetylase activity
GO:1901726 negative regulation of histone deacetylase activity
GO:1901727 positive regulation of histone deacetylase activity
GO:1902028 regulation of histone H3-K18 acetylation
GO:1902029 positive regulation of histone H3-K18 acetylation
GO:1902030 negative regulation of histone H3-K18 acetylation

GO:1902275 regulation of chromatin organization
 GO:1902360 conversion of ds siRNA to ss siRNA involved in chromatin silencing by small RNA
 heterochromatin maintenance involved in chromatin silencing at centromere outer repeat
 GO:1902368 region
 GO:1902464 regulation of histone H3-K27 trimethylation
 GO:1902465 negative regulation of histone H3-K27 trimethylation
 GO:1902466 positive regulation of histone H3-K27 trimethylation
 GO:1902562 H4 histone acetyltransferase complex
 GO:1902649 regulation of histone H2A-H2B dimer displacement
 GO:1902650 negative regulation of histone H2A-H2B dimer displacement
 GO:1902651 positive regulation of histone H2A-H2B dimer displacement
 GO:1902794 heterochromatin island assembly
 GO:1902795 heterochromatin domain assembly
 GO:1902801 regulation of heterochromatin island assembly
 GO:1902802 regulation of heterochromatin domain assembly
 GO:1903212 protein localization to mating-type region heterochromatin
 GO:1903213 protein localization to subtelomeric heterochromatin
 GO:1903584 regulation of histone deubiquitination
 GO:1903585 negative regulation of histone deubiquitination
 GO:1903586 positive regulation of histone deubiquitination
 GO:1903756 regulation of transcription from RNA polymerase II promoter by histone modification
 GO:1903757 positive regulation of transcription from RNA polymerase II promoter by histone modification
 negative regulation of transcription from RNA polymerase II promoter by histone
 GO:1903758 modification
 GO:1904173 regulation of histone demethylase activity (H3-K4 specific)
 GO:1904174 negative regulation of histone demethylase activity (H3-K4 specific)
 GO:1904175 positive regulation of histone demethylase activity (H3-K4 specific)
 GO:1904497 heterochromatin assembly involved in chromatin silencing at centromere outer repeat region
 GO:1904499 regulation of chromatin-mediated maintenance of transcription
 GO:1904500 negative regulation of chromatin-mediated maintenance of transcription
 GO:1904501 positive regulation of chromatin-mediated maintenance of transcription
 GO:1904793 regulation of euchromatin binding
 GO:1904794 negative regulation of euchromatin binding
 GO:1904795 positive regulation of euchromatin binding
 GO:1905268 negative regulation of chromatin organization
 GO:1905269 positive regulation of chromatin organization
 GO:1905435 regulation of histone H3-K4 trimethylation
 GO:1905436 negative regulation of histone H3-K4 trimethylation
 GO:1905437 positive regulation of histone H3-K4 trimethylation
 GO:1905471 regulation of histone H3-K79 dimethylation
 GO:1905472 negative regulation of histone H3-K79 dimethylation
 GO:1905473 positive regulation of histone H3-K79 dimethylation
 GO:1905547 regulation of telomeric heterochromatin assembly
 GO:1905548 negative regulation of telomeric heterochromatin assembly
 GO:1905549 positive regulation of telomeric heterochromatin assembly
 GO:1905632 protein localization to euchromatin

GO:1905633 establishment of protein localization to euchromatin
 GO:1905634 regulation of protein localization to chromatin
 GO:1905642 negative regulation of DNA methylation
 GO:1905643 positive regulation of DNA methylation
 GO:1905886 chromatin remodeling involved in meiosis I
 GO:1990141 chromatin silencing at centromere outer repeat region
 GO:1990152 protein localization to telomeric heterochromatin
 GO:1990153 maintenance of protein localization to heterochromatin
 GO:1990162 histone deacetylase activity (H3-K4 specific)
 GO:1990164 histone H2A phosphorylation
 GO:1990188 euchromatin binding
 GO:1990226 histone methyltransferase binding
 GO:1990244 histone kinase activity (H2A-T120 specific)
 GO:1990245 histone H2A-T120 phosphorylation
 GO:1990258 histone glutamine methylation
 GO:1990259 histone-glutamine methyltransferase activity
 GO:1990280 RNA localization to chromatin
 GO:1990437 snRNA 2'-O-methylation
 GO:1990438 U6 2'-O-snRNA methylation
 GO:1990577 C-terminal protein demethylation
 GO:1990596 histone H3-K4 deacetylation
 GO:1990619 histone H3-K9 deacetylation
 GO:1990678 histone H4-K16 deacetylation
 GO:1990679 histone H4-K12 deacetylation
 GO:1990700 nucleolar chromatin organization
 GO:1990744 primary miRNA methylation
 GO:1990841 promoter-specific chromatin binding
 GO:1990853 histone H2A SQE motif phosphorylation
 GO:1990889 H4K20me3 modified histone binding
 GO:1990983 tRNA demethylation
 GO:2000281 regulation of histone H3-T3 phosphorylation
 GO:2000615 regulation of histone H3-K9 acetylation
 GO:2000616 negative regulation of histone H3-K9 acetylation
 GO:2000617 positive regulation of histone H3-K9 acetylation
 GO:2000618 regulation of histone H4-K16 acetylation
 GO:2000619 negative regulation of histone H4-K16 acetylation
 GO:2000620 positive regulation of histone H4-K16 acetylation
 GO:2000749 positive regulation of chromatin silencing at rDNA
 histone H3-T3 phosphorylation involved in chromosome passenger complex localization to
 GO:2000751 kinetochore
 GO:2000775 histone H3-S10 phosphorylation involved in chromosome condensation
 GO:2000776 histone H4 acetylation involved in response to DNA damage stimulus
 regulation of histone H3-T3 phosphorylation involved in chromosome passenger complex
 GO:2000817 localization to kinetochore
 GO:2000873 regulation of histone H4 acetylation involved in response to DNA damage stimulus

GO:2001160 regulation of histone H3-K79 methylation
GO:2001161 negative regulation of histone H3-K79 methylation
GO:2001162 positive regulation of histone H3-K79 methylation
GO:2001166 regulation of histone H2B ubiquitination
GO:2001167 negative regulation of histone H2B ubiquitination
GO:2001168 positive regulation of histone H2B ubiquitination
GO:2001173 regulation of histone H2B conserved C-terminal lysine ubiquitination
GO:2001174 negative regulation of histone H2B conserved C-terminal lysine ubiquitination
GO:2001175 positive regulation of histone H2B conserved C-terminal lysine ubiquitination
GO:2001253 regulation of histone H3-K36 trimethylation
GO:2001254 negative regulation of histone H3-K36 trimethylation
GO:2001255 positive regulation of histone H3-K36 trimethylation

Supplementary Table 3. Human and murine genes related to epigenetics mechanisms

<i>Homo sapiens</i> genes
ABRAXAS1, AC006064.6, AC007998.2, AC068896.3, AC069288.1, AC099811.2, AC106886.6, AC120114.4, ACTB, ACTL6A, ACTL6B, ACTN4, ACTR5, ACTR6, ACTR8, ACTRT1, ADNP, AEBP2, AHCY, AICDA, AIRE, AJUBA, AKAP8, AKAP8L, AL031708.1, AL031777.2, AL133500.1, ALKBH1, ALKBH2, ALKBH3, ALKBH4, ALKBH5, ALKBH8, AMT, ANKRA2, ANKRD1, ANKRD17, ANKRD2, ANP32A, ANP32B, ANP32E, ANTKMT, AP001267.5, APBB1, APEX1, APOBEC1, APOBEC2, APOBEC3A, APOBEC3B, APOBEC3C, APOBEC3D, APOBEC3F, APOBEC3G, APOBEC3H, APTX, AR, ARID1A, ARID1B, ARID2, ARID3A, ARID3C, ARID4A, ARID4B, ARMT1, ARRB1, ARX, AS3MT, ASCL1, ASF1A, ASF1B, ASH1L, ASH2L, ASIP, ASMT, ASMTL, ASXL1, ASXL2, ASXL3, ASZ1, ATAD2, ATAD2B, ATF2, ATF5, ATF7IP, ATG5, ATM, ATOH1, ATPSCKMT, ATRX, ATXN3, ATXN7, ATXN7L3, AURKA, AURKB, AURKC, AUTS2, BABAM1, BABAM2, BAG6, BAHCC1, BAHD1, BANP, BAP1, BARX2, BAZ1A, BAZ1B, BAZ2A, BAZ2B, BCAS3, BCDIN3D, BCL6, BCOR, BCORL1, BEND3, BEND6, BEX4, BHLHE41, BHMT, BHMT2, BMI1, BMT2, BORCS8-MEF2B, BPTF, BRCA1, BRCA2, BRCC3, BRD1, BRD2, BRD3, BRD4, BRD7, BRD8, BRD9, BRDT, BRIP1, BRMS1, BRMS1L, BRPF1, BRPF3, BRWD1, BTAF1, BTG2, BUD23, C17orf49, C6orf89, CABIN1, CALCOCO1, CAMK2D, CAMKMT, CAMTA2, CARM1, CARNMT1, CBLL1, CBX1, CBX2, CBX3, CBX4, CBX5, CBX6, CBX7, CBX8, CCNA2, CCNB1, CCND1, CCNT1, CCNT2, CD1D, CD3EAP, CDAN1, CDC20, CDC45, CDC73, CDCA5, CDK1, CDK2, CDK5, CDK9, CDKN2A, CDT1, CDY1, CDY1B, CDY2A, CDY2B, CDYL, CDYL2, CEBPA, CEBPB, CECR2, CENPA, CENPB, CENPF, CENPS, CENPV, CGAS, CHAF1A, CHAF1B, CHD1, CHD1L, CHD2, CHD3, CHD4, CHD5, CHD6, CHD7, CHD8, CHD9, CHEK1, CHMP7, CHRAC1, CHTOP, CIC, CIR1, CITED1, CITED2, CKS1B, CKS2, CLOCK, CMTR1, CMTR2, COMMD3-BMI1, COMT, COMTD1, COPRS, COQ3, COQ5, CPA4, CRAMP1, CREB1, CREB3L1, CREBBP, CREBZF, CRTC2, CRY1, CSKMT, CSNK2B, CTBP1, CTBP2, CTCF, CTCFL, CTNNB1, CTR9, CTSL, CUL4B, CXXC1, CYP1A1, CYP1A2, CYP2C8, CYP2C9, CYP2D6, CYP3A4, CYP3A43, CYP3A5, CYP3A7, CYP51A1, DACT1, DAPK3, DAXX, DCAF1, DCP2, DDB1, DDB2, DDX1, DDX11, DDX20, DDX21, DDX4, DDX5, DEK, DHX30, DHX36, DHX9, DIMT1, DLD, DLST, DLX1, DLX2, DLX3, DMAP1, DMRT1, DMRTC2, DNAJC2, DNMT1, DNMT3A, DNMT3B, DNMT3L, DOT1L, DPF1, DPF2, DPF3, DPH5, DPPA2, DPPA3, DPPA4, DPY30, DR1, DRD1, DTX3L, DYDC1, DYDC2, E2F4, EBF2, ECD, ECE2, EED, EEF1AKMT1, EEF1AKMT2, EEF1AKMT3, EEF1AKMT4, EEF1AKMT4-ECE2, EEF1AKNMT, EEF2KMT, EGFR, EGR1, EGR2, EHMT1, EHMT2, EID1, ELK1, ELK4, ELOF1, EMG1, EMSY, ENY2, EOMES, EP300, EP400, EPAS1, EPC1, EPC2, EPOP, ERCC1, ERCC3, ERCC4, ERCC6, ERG, ERI1, ESCO2, ESR1, ETF1, ETFBKMT, ETS1, EXO1, EXOSC10, EXOSC4, EYA1, EYA2, EYA3, EYA4, EZH1, EZH2, EZHIP, FAAP24, FABP1, FAM156A, FAM156B, FAM172A, FAM50A, FAM50B, FAM86B1, FAM86B2, FAM86C1, FAM98A, FAM98B, FANCM, FBH1, FBL, FBLL1, FBXO11, FDXACB1, FEZF2, FKBP6, FLCN, FLI1, FMR1, FOS, FOSL2, FOXA1, FOXA2, FOXA3, FOXC1, FOXC2, FOXN4, FOXO1, FOXO3, FOXO4, FOXP3, FP565260.4, FTO, FTSJ1, FTSJ3, FUS, GABPA, GADD45A, GAMT, GATA1, GATA2, GATA3, GATA6, GATAD1, GATAD2A, GATAD2B, GCG, GCM1, GFI1, GFI1B, GLI1, GLI2, GLI3, GLMN, GLYR1, GMNC, GMNN, GNAS, GNMT, GPER1, GPX1, GPX4, GRHL1, GRHL2, GRHL3, GRWD1, GSPT1, GSTO1, GTF2B, GTF2F1, GTF2H1, GTF3C4, GTPBP3, H1-0, H1-1, H1-10, H1-2, H1-3, H1-4, H1-5, H1-6, H1-7, H1-8, H2AB1, H2AB2, H2AB3, H2AC1, H2AC11, H2AC12, H2AC13, H2AC14, H2AC15, H2AC16, H2AC17, H2AC18, H2AC19, H2AC20, H2AC21, H2AC4, H2AC6, H2AC7, H2AC8, H2AJ, H2AP, H2AW, H2AX, H2AZ1, H2AZ2, H2BC1, H3-3A, H3-3B, H3C1, H3C10, H3C11, H3C12, H3C13, H3C14, H3C15, H3C2, H3C3, H3C4, H3C6, H3C7, H3C8, H4-16, H4C1, H4C11, H4C12, H4C13, H4C14, H4C15, H4C2, H4C3, H4C4, H4C5, H4C6, H4C8, H4C9, HASPIN, HAT1, HCFC1, HCFC2, HDAC1, HDAC10, HDAC11, HDAC2, HDAC3, HDAC4, HDAC5, HDAC6, HDAC7, HDAC8, HDAC9, HELLS, HEMK1, HENMT1, HES1, HES5, HESX1, HEY2, HIC1, HIF1A, HINFP, HIPK4, HIRA, HIRIP3, HJURP, HLCS, HLTF, HMBOX1, HMG20A, HMG20B, HMGA1, HMGA2, HMGB1, HMGB2, HMGB3, HMGB4, HMGN3, HMGN5, HNF1A, HNF4A, HNMT, HNRNPC, HNRNPD, HNRNPU, HOXA10, HOXC13, HOXD10, HOXD13, HP1BP3, HPF1, HR, HSD17B10, HSF1, HSF4, HSP90AA1, HSP90AB1, HSPA1A, HSPA1B, HUWE1, ICMT, IFI16, IFT74, IGF2, IKZF1, IKZF3, IL1B, INCENP, ING1, ING2, ING3, ING4, ING5, INMT, INO80, INO80B, INO80B-WBP1, INO80C, INO80E, INSM1, IPO7, IPO9, IRF4, ISL1, IWS1, JADE1, JADE2, JADE3, JAK2, JARID2, JDP2, JMJD1C, JMJD6, JMJD7, JUN, KANSL1, KANSL1L, KANSL2, KANSL3, KAT14, KAT2A, KAT2B, KAT5, KAT6A, KAT6B, KAT7, KAT8, KCTD21, KDM1A, KDM1B, KDM2A, KDM2B, KDM3A, KDM3B, KDM4A, KDM4B, KDM4C, KDM4D, KDM4E, KDM4F, KDM5A, KDM5B, KDM5C, KDM5D, KDM6A, KDM6B, KDM7A, KDM8, KLF14, KLF2, KLF4, KLHDC3, KMT2A, KMT2B, KMT2C, KMT2D, KMT2E, KMT5A, KMT5B, KMT5C, KPNA2, KPNA7, L3MBTL1, L3MBTL2, L3MBTL3, L3MBTL4, LCMT1, LCMT2, LDB1, LEF1, LEMD2, LEO1, LHX2, LIF, LMNA, LOXL2, LRRK2, LRTOMT, LRWD1, LSM1, LSM10, LSM11, M1AP, MACROH2A1, MACROH2A2, MAEL,

MAGEA1, MAGEA2, MAGEA2B, MAP1S, MAP3K12, MAP3K7, MAPK15, MAPK3, MAPK8, MAPT, MAT1A, MAT2A, MAT2B, MBD1, MBD2, MBD3, MBD3L1, MBD3L2, MBD3L2B, MBD3L3, MBD3L4, MBD3L5, MBD5, MBD6, MBIP, MBTD1, MCM2, MCM3AP, MCM8, MCM9, MCMBP, MCRS1, MEAF6, MECOM, MECP2, MED1, MED12, MED24, MED25, MEF2A, MEF2B, MEF2C, MEF2D, MEIOB, MEIS1, MEIS3, MEN1, MEOX1, MEPCE, METTL1, METTL11B, METTL14, METTL15, METTL16, METTL17, METTL18, METTL21A, METTL21C, METTL22, METTL23, METTL24, METTL25, METTL2A, METTL2B, METTL3, METTL4, METTL5, METTL6, METTL7A, METTL7B, METTL8, MGMT, MIER1, MIER2, MIER3, MIR182, MIR29A, MIR29B1, MIR29B2, MIR29C, MIS18A, MITF, MKI67, MLH1, MLH3, MLLT10, MLLT3, MLLT6, MMACHC, MNT, MORC1, MORC2, MORF4L1, MORF4L2, MOS, MOV10L1, MPHOSPH8, MPO, MRGBP, MRM1, MRM2, MRM3, MRNIP, MSGN1, MSH2, MSH6, MSL1, MSL2, MSL3, MT3, MTA1, MTA2, MTA3, MTERF4, MTF1, MTF2, MTHFR, MTO1, MTPAP, MTR, MTRR, MUC1, MYB, MYBBP1A, MYC, MYO1C, MYOD, MYOD1, MYOG, MYSM1, N6AMT1, NAA40, NAA50, NAA60, NACC1, NACC2, NAP1L2, NASP, NCAPD2, NCAPD3, NCAPG2, NCAPH, NCAPH2, NCBP1, NCBP2, NCOA1, NCOA2, NCOA3, NCOA5, NCOA6, NCOR1, NCOR2, NDUFAF5, NDUFAF7, NEK11, NELFA, NELFE, NEUROD1, NEUROG1, NEUROG3, NFAT5, NFATC1, NFATC2, NFATC3, NFATC4, NFE2L1, NFIA, NFKB1, NFKB2, NIBAN2, NIPBL, NKAP, NKAPL, NKX2-2, NKX2-5, NKX3-1, NKX6-1, NNMT, NOC2L, NOC3L, NONO, NOP2, NOP56, NOS1, NOTCH1, NPM1, NPM2, NPM3, NR1H4, NR2C1, NR2E1, NR3C1, NR4A3, NR5A1, NR5A2, NRDE2, NRIP1, NRL, NSD1, NSD2, NSD3, NSUN2, NSUN3, NSUN4, NSUN5, NSUN6, NSUN7, NTMT1, NUCKS1, NUDT21, NUDT5, NUP62, NUP98, NUPR1, OBI1, OGDH, OGT, ONECUT1, ORC1, OTUB1, OTUD4, OVOL2, PABPC1L, PADI1, PADI2, PADI3, PADI4, PADI6, PAF1, PAGR1, PAK1, PARG, PARK7, PARP1, PARP10, PARP9, PATZ1, PAX5, PAX6, PAX7, PAXBP1, PAXIP1, PBRM1, PBX2, PCGF1, PCGF2, PCGF3, PCGF5, PCGF6, PCIF1, PCLAF, PCMT1, PCMTD1, PCMTD2, PCNA, PDX1, PELP1, PEMT, PER1, PER2, PHB, PHC1, PHF1, PHF10, PHF13, PHF19, PHF2, PHF20, PHF21A, PHF23, PHF6, PHF8, PHIP, PICK1, PIH1D1, PIK3CA, PINK1, PIWIL2, PIWIL4, PKN1, PKN2, PKNOX1, PLAC8, PLD6, PLK1, PNMT, POLA1, POLD1, POLE, POLE3, POLG, POLQ, POLR1A, POLR1B, POLR1C, POLR1D, POLR1E, POLR2A, POLR2B, POLR2E, POLR2F, POLR2H, POLR2K, POLR2L, POLR3A, POLR3D, POR, POU1F1, POU4F1, POU4F2, PPARG, PPARGC1A, PPHLN1, PPM1D, PPM1F, PPME1, PPP3CA, PPP5C, PRDM1, PRDM10, PRDM11, PRDM12, PRDM13, PRDM14, PRDM15, PRDM16, PRDM2, PRDM4, PRDM5, PRDM6, PRDM7, PRDM8, PRDM9, PRIMPOL, PRKAA1, PRKAA2, PRKCA, PRKCB, PRKCD, PRKD1, PRKD2, PRKN, PRMT1, PRMT2, PRMT3, PRMT5, PRMT6, PRMT7, PRMT8, PRMT9, PROP1, PRORP, PSME4, PTF1A, PTMA, PWP1, PWWP2A, PWWP3A, PYGO1, PYGO2, RAB3B, RAB3D, RAB6A, RAC1, RAD17, RAD21, RAD21L1, RAD51, RAD9A, RAG1, RAG2, RAMAC, RAMACL, RAN, RARA, RB1, RBBP4, RBBP5, RBBP7, RBL1, RBL2, RBM14, RBM15, RBM15B, RBMX, RBPJ, RBPJL, RCBTB1, RCC1, RCCD1, RCOR1, REC8, REL, RELA, RELB, RERE, RESF1, REST, RFXANK, RIF1, RING1, RIOX1, RIOX2, RIT2, RLF, RNF168, RNF2, RNF20, RNF40, RNF8, RNMT, RPS6KA4, RPS6KA5, RRNAD1, RRP8, RSNB1, RSF1, RTF1, RUNX2, RUVBL1, RUVBL2, RXRA, RYBP, SAFB, SAP30, SAP30L, SART3, SATB1, SATB2, SBNO1, SBNO2, SCMH1, SDR16C5, SET, SETD1A, SETD1B, SETD2, SETD3, SETD4, SETD5, SETD6, SETD7, SETD9, SETDB1, SETDB2, SETMAR, SETSIP, SF3B1, SFMBT1, SFMBT2, SFPQ, SGF29, SHMT2, SIN3A, SIN3B, SIRT1, SIRT2, SIRT3, SIRT6, SIRT7, SIX1, SIX3, SKI, SKIL, SKOR2, SKP1, SLBP, SLC30A9, SMAD2, SMAD3, SMAD4, SMAD6, SMARCA1, SMARCA2, SMARCA4, SMARCA5, SMARCA6, SMARCA7, SMARCB1, SMARCC1, SMARCC2, SMARCD1, SMARCD2, SMARCD3, SMARCE1, SMC1A, SMC3, SMCHD1, SMG5, SMYD1, SMYD2, SMYD3, SMYD4, SMYD5, SNAI2, SNCA, SNRNPB, SNRPD3, SNRPE, SNRPF, SNRPG, SNW1, SOX1, SOX10, SOX14, SOX15, SOX2, SOX9, SP1, SP2, SP3, SPHK2, SPI1, SPIN1, SPIN2A, SPIN2B, SPIN3, SPIN4, SPOUT1, SPTY2D1, SRCAP, SREBF1, SRF, SS18L1, SSB, SSBP1, SSRP1, STAG1, STAG2, STAG3, STAT1, STAT3, STAT5B, STPG4, SUDS3, SUPT16H, SUPT3H, SUPT4H1, SUPT5H, SUPT6H, SUPT7L, SUV39H1, SUV39H2, SUZ12, SVEP1, TADA1, TADA2A, TADA2B, TADA3, TAF1, TAF10, TAF12, TAF1A, TAF1B, TAF1C, TAF1D, TAF1L, TAF2, TAF5L, TAF6, TAF6L, TAF7, TAF7L, TAF9, TAL1, TARBP1, TASOR, TBL1X, TBL1XR1, TBL1Y, TBP, TCF21, TCF4, TCF7L1, TCF7L2, TDG, TDRD1, TDRD12, TDRD3, TDRD5, TDRD9, TDRKH, TENT2, TENT4A, TENT4B, TET1, TET2, TET3, TFAM, TFAP2A, TFAP2B, TFAP2C, TFAP4, TFB1M, TFB2M, TGFB1, TGS1, THADA, THRA, THRB, THUMPD2, THUMPD3, TICRR, TLE4, TLK1, TLK2, TNKS, TNP1, TNRC18, TONSL, TOP1, TOP2A, TOP2B, TOX, TOX3, TP53, TP53BP1, TP63, TPMT, TPR, TRAF6, TRDMT1, TRIM16, TRIM24, TRIM27, TRIM28, TRIM37, TRIM66, TRIM68, TRIP12, TRIP4, TRMO, TRMT1, TRMT10A, TRMT10B, TRMT10C, TRMT11, TRMT112, TRMT12, TRMT13, TRMT1L, TRMT2A, TRMT2B, TRMT44, TRMT5, TRMT6, TRMT61A, TRMT61B, TRMT9B, TRMU, TRRAP, TSHZ1, TSHZ2, TSHZ3, TSPYL2, TTC5, TTF1, TTLL12, TWIST1, TWISTNB, TYMS, TYW3, UBE2A, UBE2B, UBE2E1, UBE2N, UBE2T, UBE2U, UBN1, UBR2, UBR5, UBTF, UCN, UHRF1, UHRF1BP1, UHRF2, UIMC1, UPF1, URI1, USF1, USP15, USP16, USP17L2, USP21, USP22, USP3, USP36, USP49, USP51, USP7, USP9X, UTP3, UTY, UXT, VAX1, VAX2, VCPKMT, VCX, VEGFA, VIRMA, VPS72, VRK1, VSX1, WAC, WAPL, WBP2, WBP2NL, WDHD1, WDR13, WDR4, WDR5, WDR5B, WDR61, WDR70, WDR82, WDTC1, WIZ, WRAP53, WRN, WT1, WTAP, XRN1, YAP1, YBX1, YEATS2, YEATS4, YWHAB, YWHAE, ZBTB1, ZBTB7A, ZBTB7B, ZC3H12A, ZC3H13, ZCCHC4, ZEB1, ZFP57, ZIC2, ZKSCAN3, ZMIZ1, ZMIZ2, ZMPSTE24, ZMYND11, ZMYND15,

ZMYND8, ZNF274, ZNF304, ZNF335, ZNF354B, ZNF431, ZNF445, ZNF451, ZNF462, ZNF473, ZNF609, ZNF683, ZNF711, ZNF750, ZNFX1, ZNHIT1, ZNRD1

Mus musculus genes

G10010010K14Rik, Abraxas1, Actl6a, Actl6b, Actn4, Actn6, Actr6, Actr7, Actr11, Adnp, Aebp2, Aicda, Aire, Ajuba, Ak6, Akap8, Akap8l, Alkbh1, Alkbh2, Alkbh3, Alkbh4, Alkbh5, Alkbh8, Amt, Ankra2, Ankrd1, Ankrd17, Ankrd2, Anp32a, Anp32b, Anp32e, Apbb1, Apbb2, Apex1, Apobec1, Apobec2, Apobec3, App, Aptx, Ar, Arid1a, Arid1b, Arid2, Arid3a, Arid3c, Arid4a, Arid4b, Arid5a, Armt1, Arrb1, Arx, As3mt, Ascl1, Asf1a, Asf1b, Ash1l, Ash2l, Asxl1, Asxl3, Asz1, Atad2, Atad2b, Atf2, Atf5, Atf7ip, Atg5, Atg7, Atm, Atoh1, Atpscmt, Atrx, Atxn1, Atxn3, Atxn7, Atxn7l3, Aurka, Aurkb, Aut2, Babam1, Babam2, Bag6, Bahcc1, Bahd1, Banp, Bap1, Barx2, Baz1a, Baz1b, Baz2a, BC004004, Bcas3, Bcdin3d, Bcl6, Bcor, Bcorl1, Bend3, Bend6, Bex4, Bhlhe41, Bhmt, Bhmt2, Bmi1, Bmt2, Bptf, Brca1, Brca2, Brcc3, Brd1, Brd2, Brd3, Brd4, Brd7, Brd8, Brd9, Brdt, Brip1, Brms1, Brms1l, Brpf1, Brpf3, Btaf1, Btg1, Btg2, Bud23, Calcoco1, Camkmt, Camta2, Carm1, Carnmt1, Cbfa2t3, Cbll1, Cbx1, Cbx2, Cbx4, Cbx5, Cbx6, Cbx7, Cbx8, Ccna2, Ccnb1, Ccnd1, Ccnt1, Ccnt2, Cdan1, Cdc20, Cdc45, Cdc6, Cdc73, Cdk1, Cdk2, Cdk5, Cdk9, Cdkn2a, Cdt1, Cdyl, Cdyl2, Cebpa, Cebpab, Cebpbg, Cecr2, Cenpb, Cenps, Cenpv, Cgas, Chaf1a, Chaf1b, Chd1, Chd1l, Chd2, Chd3, Chd4, Chd5, Chd6, Chd7, Chd8, Chd9, Chek1, Chmp7, Chtop, Cic, Cir1, Cited1, Cited2, Cks1b, Cks1brt, Cks2, Clock, Cmtr1, Cmtr2, Comt, Comtd1, Coprs, Coq3, Coq5, Coq7, Cramp1l, Creb1, Crebbp, Crebzf, Crtc2, Crx, Crxos, Cry1, Csnk2b, Ctbp1, Ctbp2, Ctcf, Ctcfl, Cttnb1, Ctr9, Ctsl, Cul4b, Cxxc1, Cyp1a1, Cyp1a2, Cyp3a11, Cyp3a13, Cyp3a16, Cyp3a25, Cyp3a41a, Cyp3a41b, Cyp3a44, Cyp3a57, Cyp3a59, Cyp51, D7Ertd443e, Dact1, Dapk3, Daxx, Dcaf1, Dcp2, Ddb1, Ddb2, Ddx1, Ddx11, Ddx20, Ddx4, Dek, Dhx30, Dhx36, Dhx9, Dimt1, Dld, Dlst, Dlx1, Dlx2, Dlx3, Dmap1, Dmrt1, Dmrte2, Dnajc2, Dnmt1, Dnmt3a, Dnmt3b, Dnmt3c, Dnmt3l, Dot1l, Dpf1, Dpf2, Dpf3, Dph5, Dppa2, Dppa3, Dppa4, Dpy30, Dr1, Drd1, Dtx3l, Dydc1, Dydc2, E2f4, Ebf2, Ecd, Eed, Eef1akmt1, Eef1akmt2, Eef1akmt3, Eef1akmt4, Eef1aknmt, Eef2kmt, Egfr, Egr1, Egr2, Ehmt1, Ehmt2, Eid1, Elk1, Elk4, Elof1, Emg1, Emsy, Eny2, Eomes, Ep300, Ep400, Epas1, Epc1, Epc2, Epop, Ercc1, Ercc3, Ercc4, Ercc6, Erg, Esco2, Esr1, Esr2, Etf1, Etfbkmt, Ets1, Exo1, Exosc10, Exosc4, Eya1, Eya2, Eya3, Eya4, Ezh1, Ezh2, Faap24, Fabp1, Fam172a, Fam173a, Fam50a, Fam50b, Fam98a, Fam98b, Fancm, Fbh1, Fbl, Fbll1, Fbxo11, Fcor, Fdxacb1, Fezf2, Fh1, Fkbp6, Flcn, Fli1, Fmr1, Fos, Fosl2, Foxa1, Foxa2, Foxa3, Foxc1, Foxc2, Foxn4, Foxo3, Foxo4, Foxp1, Foxp3, Fto, Ftsj1, Ftsj3, Fus, Gabpa, Gadd45a, Gamt, Gata1, Gata2, Gata3, Gata4, Gata6, Gatad1, Gcg, Gcm1, Gfi1, Gfi1b, Gk, Gli1, Gli2, Gli3, Glmn, Gylr1, Gm10184, Gm10767, Gm20737, Gm20738, Gm20747, Gm20772, Gm20773, Gm20777, Gm20795, Gm20806, Gm20807, Gm20809, Gm20812, Gm20815, Gm20816, Gm20821, Gm20822, Gm20823, Gm20825, Gm20826, Gm20828, Gm20830, Gm20831, Gm20834, Gm20852, Gm20854, Gm20865, Gm20867, Gm20873, Gm20877, Gm20909, Gm20914, Gm20917, Gm20918, Gm20924, Gm21118, Gm21244, Gm21292, Gm21310, Gm21394, Gm21425, Gm21440, Gm21637, Gm21719, Gm21721, Gm21778, Gm21812, Gm21854, Gm21874, Gm21943, Gm27027, Gm28043, Gm28079, Gm28171, Gm29049, Gm29644, Gm33815, Gm42715, Gm42742, Gm49333, Gm49388, Gm50367, Gm5096, Gm5136, Gm5926, Gmnc, Gmnn, Gnass, Gnmt, Gper1, Gpx1, Gpx4, Grhl1, Grhl2, Grhl3, Grwd1, Gsk3a, Gsk3b, Gspt1, Gtf2b, Gtf2f1, Gtf2h1, Gtf3c4, Gtpbp3, H1f0, H1f1, H1f10, H1f2, H1f3, H1f4, H1f5, H1f7, H1f8, H2ab1, H2ab2, H2ab3, H2ac1, H2ac10, H2ac11, H2ac12, H2ac13, H2ac15, H2ac18, H2ac19, H2ac20, H2ac21, H2ac4, H2ac6, H2ac7, H2ac8, H2aj, H2al1a, H2al1b, H2al1c, H2al1d, H2al1e, H2al1f, H2al1g, H2al1h, H2al1i, H2al1j, H2al1k, H2al1m, H2al1n, H2al1o, H2al2a, H2al2b, H2al2c, H2al3, H2ap, H2aw, H2ax, H2az1, H2az2, H2bc1, H3c13, H3c14, H3c15, H3c2, H3c3, H3c4, H3c6, H3c7, H3f3a, H3f3b, Haspin, Hat1, Hcfc1,

Hcfc2, Hdac1, Hdac10, Hdac11, Hdac2, Hdac3, Hdac4, Hdac5, Hdac6, Hdac7, Hdac8, Hdac9, Hdgfl3, Hells, Hemk1, Henmt1, Hes1, Hes5, Hesx1, Hey2, Hhex, Hic1, Hif1a, Hils1, Hinfp, Hipk4, Hira, Hist1h2an, Hist1h2ao, Hist1h2ap, Hjurp, Hlcs, Hltf, Hmbox1, Hmg20a, Hmg20b, Hmga1, Hmga1b, Hmga2, Hmgb1, Hmgb2, Hmgb3, Hmgb4, Hmgn1, Hmgn3, Hmgn5, Hnf1a, Hnf4a, Hnmt, Hnrnpd, Hnrnpu, Hopx, Hoxa10, Hoxc13, Hoxd10, Hoxd13, Hp1bp3, Hpf1, Hr, Hsd17b10, Hsf1, Hsf4, Hsp90aa1, Hsp90ab1, Hspa1a, Huwe1, Icm1, Ift74, Igf2, Ikzf3, Ilf3, Incenp, Ing1, Ing2, Ing3, Ing4, Ing5, Inmt, Ino80, Ino80b, Ino80c, Ino80e, Insm1, Ipo7, Irf4, Isl1, Iws1, Jade1, Jade2, Jade3, Jak2, Jarid2, Jdp2, Jmjd1c, Jmjd6, Jmjd7, Jun, Kansl1, Kansl1l, Kansl2, Kansl3, Kat14, Kat2a, Kat2b, Kat5, Kat6a, Kat6b, Kat7, Kat8, Kctd21, Kdm1a, Kdm1b, Kdm2a, Kdm2b, Kdm3a, Kdm4a, Kdm4b, Kdm4c, Kdm4d, Kdm5a, Kdm5b, Kdm5c, Kdm5d, Kdm6a, Kdm6b, Kdm7a, Kdm8, Klf14, Klf2, Klf4, Klhdc3, Kmt2a, Kmt2b, Kmt2c, Kmt2d, Kmt2e, Kmt5a, Kmt5b, Kmt5c, Kpna2, Kpna7, L3mbtl1, L3mbtl2, L3mbtl3, Lar7, Lcmt1, Lcmt2, Lcor, Ldb1, Lef1, Lemd2, Leo1, Lhx2, Lif, Lmna, Lmo2, Loxl2, Lrrk2, Lrwd1, Lsm1, Lsm10, M1ap, Macroh2a1, Macroh2a2, Mael, Map1s, Map3k12, Map3k7, Mapk15, Mapk3, Mapk8, Mbd2, Mbd3, Mbd3l1, Mbd3l2, Mbd5, Mbd6, Mbip, Mbd1, Mcm2, Mcm3ap, Mcm8, Mcm9, Mcmbp, Mcrs1, Meaf6, Mecom, Mecp2, Med1, Med12, Med24, Med25, Mef2a, Mef2b, Mef2c, Mef2d, Meiob, Meis1, Meis3, Men1, Meox1, Mepce, Mettl1, Mettl11b, Mettl14, Mettl15, Mettl16, Mettl17, Mettl18, Mettl2, Mettl21a, Mettl21c, Mettl21e, Mettl22, Mettl23, Mettl24, Mettl3, Mettl4, Mettl5, Mettl6, Mettl7a1, Mettl7a2, Mettl7b, Mettl8, Mgmt, Mier1, Mier2, Mier3, Mir744, Mis18a, Mitf, Mki67, Mkrrn1, Mlh1, Mlh3, Mllt10, Mllt3, Mllt6, Mmachc, Mnt, Morc1, Morc2a, Morf4l1, Morf4l2, Mos, Mphosph8, Mrgbp, Mrm1, Mrm2, Mrm3, Mrnip, Msgn1, Msh2, Msh6, Msl1, Msl2, Msl3, Msl3l2, Mst1, Msx3, Mt3, Mta1, Mta2, Mta3, Mtap, Mtf1, Mtf2, Mthfr, Mtpap, Mtr, Myb, Myc, Myocd, Myod1, Myog, Mysm1, N6amt1, Naa40, Naa50, Naa60, Nacc2, Nanog, Nap1l2, Nasp, Nat8f6, Nat8f7, Ncapd2, Ncapd3, Ncapg2, Ncaph, Ncaph2, Ncl, Ncoa1, Ncoa2, Ncoa3, Ncoa5, Ncor1, Ncor2, Nduf5, Nduf5f7, Nek11, Nelfa, Nelfe, Neurod1, Neurog1, Neurog3, Nfat5, Nfatc2, Nfatc4, Nfe2l1, Nfia, Nfkb1, Nfkb2, Nipbl, Nkap, Nkapl, Nkx2-2, Nkx2-5, Nkx3-1, Nkx6-1, Nnmt, Noc2l, Noc3l, Nono, Nop2, Nop56, Nos1, Notch1, Npm1, Npm2, Npm3, Nr1h4, Nr2c1, Nr2e1, Nr4a3, Nr5a1, Nr5a2, Nrde2, Nrip1, Nrl, Nsd1, Nsd2, Nsd3, Nsun2, Nsun3, Nsun4, Nsun5, Nsun6, Nsun7, Ntmt1, Nucks1, Nudt21, Nudt5, Nup153, Nup98, Nupr1, Oga, Ogdh, Ogt, Onecut1, Orc1, Otub1, Otud4, Ovol2, Pabpc1l, Padi1, Padi2, Padi3, Padi4, Padi6, Paf1, Pagr1a, Pagr1b, Pak1, Parg, Park7, Parp1, Parp10, Parp9, Patz1, Pax3, Pax5, Pax6, Pax7, Paxbp1, Paxip1, Pbrm1, Pbx2, Pcgf1, Pcgf2, Pcgf3, Pcgf5, Pcgf6, Pcif1, Pclaf, Pcmt1, Pcmt1d, Pcmt2, Pcna, Pdx1, Pelp1, Pemt, Per1, Phb, Phc1, Phf1, Phf13, Phf19, Phf2, Phf20, Phf21a, Phf23, Phf6, Phf8, Phip, Pih1d1, Pik3ca, Pim3, Pink1, Pitx2, Piwil2, Piwil4, Pkn1, Pkn2, Pknx1, Pla2g4a, Plac8, Pld6, Plk1, Pml, Pnmt, Pola1, Pold1, Pole, Pole3, Polg, Polq, Polr1a, Polr2a, Polr2b, Polr3a, Polr3d, Por, Pou1f1, Pou2f1, Pou4f1, Pou4f2, Pou5f1, Ppargc1a, Ppm1d, Ppm1f, Ppme1, Ppp3ca, Ppp5c, Prdm1, Prdm10, Prdm11, Prdm12, Prdm13, Prdm14, Prdm15, Prdm16, Prdm2, Prdm4, Prdm5, Prdm6, Prdm9, Primpol, Prkaa1, Prkaa2, Prkca, Prkcb, Prkcd, Prkd1, Prkd2, Prkn, Prmt1, Prmt2, Prmt3, Prmt5, Prmt6, Prmt7, Prmt8, Prmt9, Prop1, Psip1, Psme4, Ptf1a, Ptma, Pwp1, Pwwp2a, Pwwp3a, Pygo1, Pygo2, Rab3b, Rab3d, Rab6a, Rac1, Rad17, Rad21, Rad21l, Rad51, Rad9a, Rag1, Rag2, Ramac, Rara, Rb1, Rbbp4, Rbbp5, Rbbp7, Rbl1, Rbl2, Rbm14, Rbm15, Rbm15b, Rbm1x, Rbm1xl1, Rbpj, Rbpjl, Rcc1, Rccd1, Rcor1, Rec8, Rela, Relb, Rere, Resf1, Rest, Rfxank, Rif1, Ring1, Riox1, Riox2, Rit2, Rlf, Rnf168, Rnf2, Rnf20, Rnf219, Rnf40, Rnf8, Rnmt, Rpa1, Rps6ka4, Rps6ka5, Rrp8, Rsb1, Rsf1, Rsl1, Rtf1, Runx2, Runx3, Ruvbl1, Ruvbl2, Rxra, Rybp, Safb, Sap30, Sap30l, Sart3, Satb1, Satb2, Sbn2, Scmh1, Scml2, Sdr16c5, Senp2, Setd1a, Setd1b, Setd2, Setd3, Setd4, Setd5, Setd6, Setd7, Setdb1, Setdb2, Setmar, Sfmbt1, Sfmbt2, Sfpq, Sgf29, Shmt2, Sik1, Sin3a, Sin3b, Sirt1, Sirt2, Sirt3, Sirt6, Sirt7, Six1, Six3, Skil, Skor2, Skp1a, Slbp, Slc30a9, Slk, Smad2, Smad3, Smad4, Smad6, Smarca1, Smarca2, Smarca4, Smarca5, Smarcad1, Smarcb1, Smarcc1, Smarcc2, Smarcd1, Smarcd2, Smarcd3, Smarce1, Smc1a, Smc3, Smchd1, Smg5, Smyd1, Smyd2,

Smyd3, Smyd4, Smyd5, Snai2, Snca, Snrpb, Snrpd3, Sox10, Sox14, Sox15, Sox9, Sp1, Sp2, Sp3, Sphk2, Spi1, Spin1, Spin2c, Spin2d, Spin2e, Spin2f, Spin2g, Spin4, Spout1, Spty2d1, Srcap, Srebf1, Srebf2, Srf, Ss18l1, Ssbp1, Ssrp1, Ssty2, Stag1, Stag2, Stag3, Stat1, Stat3, Stat5b, Stpg4, Suds3, Supt3, Supt4a, Supt5, Supt6, Supt7l, Suv39h1, Suv39h2, Suz12, Svep1, Tada1, Tada2a, Tada2b, Tada3, Taf1, Taf10, Taf12, Taf5l, Taf6, Taf6l, Taf7, Taf7l, Taf9, Tal1, Tarbp1, Tasor, Tbl1x, Tbl1xr1, Tcf21, Tcf3, Tcf4, Tcf7l2, Tdg, Tdrd1, Tdrd12, Tdrd3, Tdrd5, Tdrd9, Tdrkh, Tent2, Tent4a, Tent4b, Tert, Tet1, Tet2, Tet3, Tfam, Tfap2b, Tfap2c, Tfap4, Tfb1m, Tfb2m, Tgfb1, Tgif1, Tgs1, Thada, Thra, Thrb, Thumpd2, Thumpd3, Ticrr, Tle1, Tle4, Tlk1, Tlk2, Tmem29, Tnks, Tnp1, Tnrc18, Tomt, Tonsl, Top1, Top2a, Top2b, Tox, Tox3, Tpr, Traf6, Trdmt1, Trim16, Trim24, Trim27, Trim28, Trim37, Trim66, Trim68, Trip12, Trip4, Trmo, Trmt1, Trmt10a, Trmt10b, Trmt10c, Trmt11, Trmt112, Trmt12, Trmt13, Trmt1l, Trmt2a, Trmt2b, Trmt44, Trmt5, Trmt6, Trmt61a, Trmt9b, Trp53, Trp53bp1, Trp63, Trrap, Tshz1, Tshz2, Tshz3, Tspyl2, Ttc5, Ttf1, Ttll12, Twist1, Tyms, Tyw3, Ube2a, Ube2b, Ube2e1, Ube2n, Ube2t, Ubn1, Ubr2, Ubr5, Ubtf, Ucn, Uhrf1, Uhrf1bp1, Uhrf2, Uimc1, Upf1, Uri1, Usf1, Usp15, Usp16, Usp22, Usp3, Usp36, Usp49, Usp51, Usp7, Usp9x, Utp3, Uty, Uxt, Vax1, Vax2, Vcpkmt, Vegfa, Virma, Vps72, Vrk1, Vsx1, Wac, Wapl, Wbp2, Wbp2nl, Wdhd1, Wdr13, Wdr4, Wdr5, Wdr5b, Wdr61, Wdr82, Wdte1, Wiz, Wrap53, Wrn, Wtap, Xbp1, Xrn1, Yap1, Ybx1, Yeats2, Yeats4, Ywhab, Ywhae, Zbtb1, Zbtb7a, Zbtb7b, Zc3h12a, Zc3h13, Zcchc4, Zeb1, Zfp143, Zfp335, Zfp354b, Zfp386, Zfp445, Zfp451, Zfp462, Zfp57, Zfp609, Zfp683, Zfp750, Zfp932, Zfp936, Zmiz1, Zmiz2, Zmpste24, Zmynd11, Zmynd15, Zmynd8, Znfx1, Znhit1

Supplementary Table 4. Differential gene expression for epigenetics related genes in murine embryonic stem-cells (mESC) assays

Gene Name	Gene Ontology	Gene Definition	Valproic Acid		Carbamazepine		Phenytoin		Methotrexate		Warfarin	
			logFC	Adj P-Value	logFC	Adj P-Value	logFC	Adj P-Value	logFC	Adj P-Value	logFC	Adj P-Value
Dmrt1	GO:0003682	chromatin binding	0.980	0.000	-	-	0.623	0.060	-	-	-	-
Eomes	GO:0003682	chromatin binding	-	-	-	-	-	-	-	-	-	-
Foxa2	GO:0003682	chromatin binding	2.655	0.000	3.715	0.000	2.146	0.003	3.398	0.000	3.422	0.000
Hhex	GO:0003682	chromatin binding	-	-	-	-	-	-	-	-	-	-
Isl1	GO:0003682	chromatin binding	0.915	0.001	1.482	0.000	1.129	0.002	1.961	0.000	1.851	0.000
Lef1	GO:0003682	chromatin binding	1.114	0.000	1.078	0.000	0.871	0.002	1.584	0.000	1.572	0.000
Mecom	GO:0003682	chromatin binding	-	-	-	-	-	-	-	-	-	-
Meis1	GO:0003682	chromatin binding	0.934	0.001	1.536	0.000	0.997	0.004	1.996	0.000	2.046	0.000
Pax3	GO:0003682	chromatin binding	-	-	-	-	-	-	-	-	-	-
Pax6	GO:0003682	chromatin binding	1.889	0.000	1.468	0.001	1.331	0.001	1.643	0.001	1.641	0.002
Rec8	GO:0003682	chromatin binding	1.123	0.000	1.929	0.000	1.114	0.005	1.655	0.001	1.911	0.000
Tgfb1	GO:0031065	positive regulation of histone deacetylation	-	-	-	-	-	-	-	-	-	-
Tshz1	GO:0003682	chromatin binding	1.690	0.000	2.675	0.000	1.432	0.006	2.314	0.000	2.336	0.001
			-	-	-	-	-	-	-	-	-	-
			0.989	0.001	1.840	0.000	1.196	0.002	1.830	0.000	1.839	0.000
			-	-	-	-	-	-	-	-	-	-
			2.294	0.000	3.319	0.000	1.983	0.003	3.103	0.000	3.416	0.000
			-	-	-	-	-	-	-	-	-	-
			1.506	0.000	1.291	0.000	0.583	0.027	1.144	0.000	0.987	0.004
			-	-	-	-	-	-	-	-	-	-
			0.656	0.003	1.281	0.000	0.922	0.001	1.606	0.000	1.717	0.000
			-	-	-	-	-	-	-	-	-	-
			2.354	0.000	3.273	0.000	2.118	0.003	2.851	0.001	2.888	0.002

Supplementary Table 5. Differential gene expression for epigenetics related genes in human embryonic stem cells (hESC) assays

Drug	Gene Name	Gene Ontology	Gene Definition	logFC	Adj P-Value
Valproic Acid	CTCFL	GO:0016571	histone methylation	3.629465075	3.01E-34
	NEUROD1	GO:0003682	chromatin binding	-1.936291357	0.005733283
	PADI3	GO:0036414	histone citrullination	1.834979456	3.04E-17
	PRKCB	GO:0003682	chromatin binding	3.518753762	8.51E-26
	PPARGC1A	GO:0031490	chromatin DNA binding	1.911997754	1.81E-23
	ASMTL	GO:0032259	methylation	1.586826695	1.53E-19
	TSHZ2	GO:0003682	chromatin binding	1.716959415	7.74E-21
	SNCA	GO:0042393	histone binding	2.107120519	1.13E-24
Carbamazepine	EYA4	GO:0016576	histone dephosphorylation	2.986393142	2.64E-23
	HESX1	GO:0003682	chromatin binding	-2.947542562	2.45E-11
	APOBEC3B	GO:0080111	DNA demethylation	-1.586545164	1.04608E-08

Supplementary Table 6. Characteristics of the mouse embryonic stem-cell (mESC) samples included in WGCNA analysis (retrieved from E-TABM-1205 and E-TABM-1216 studies)

Source Name	cell	concentration	exposure	time
PT101_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT_102_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT_104_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT105_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT_106_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT_108_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT109_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT110_(Mouse430_2)	ES-D3 - mESC	3	carbamazepine	4-day differentiated
PT111_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT_112_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT113_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT114_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT_115_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT_117_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT118_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT_119_(Mouse430_2)	ES-D3 - mESC	100	carbamazepine	4-day differentiated
PT121_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT123_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT125_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT_126_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT127_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT_128_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT_129_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT_130_(Mouse430_2)	ES-D3 - mESC	1	phenytoin	4-day differentiated
PT131_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
PT_132_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
PT_134_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
PT135_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
PT_136_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
PT138_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
PT139_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
PT_140_(Mouse430_2)	ES-D3 - mESC	30	phenytoin	4-day differentiated
COND4_1	ES-D3 - mESC	0	none	4-day differentiated
COND4_3n	ES-D3 - mESC	0	none	4-day differentiated
COND4_4	ES-D3 - mESC	0	none	4-day differentiated
COND4_5n	ES-D3 - mESC	0	none	4-day differentiated
COND4_7	ES-D3 - mESC	0	none	4-day differentiated
VPA15_1	ES-D3 - mESC	15	valproic acid	4-day differentiated
VPA15_2	ES-D3 - mESC	15	valproic acid	4-day differentiated
VPA15_3	ES-D3 - mESC	15	valproic acid	4-day differentiated

VPA15_4	ES-D3 - mESC	15	valproic acid	4-day differentiated
VPA15_5	ES-D3 - mESC	15	valproic acid	4-day differentiated
VPA15_6	ES-D3 - mESC	15	valproic acid	4-day differentiated
VPA15_7	ES-D3 - mESC	15	valproic acid	4-day differentiated
VPA15_8	ES-D3 - mESC	15	valproic acid	4-day differentiated
VPA60_1	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA60_2	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA60_3	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA60_5	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA60_6	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA60_7	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA60_8	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA60_10	ES-D3 - mESC	60	valproic acid	4-day differentiated
VPA250_1	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA250_2	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA250_3	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA250_4	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA250_5	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA250_6	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA250_7	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA250_8	ES-D3 - mESC	250	valproic acid	4-day differentiated
VPA1000_1	ES-D3 - mESC	1000	valproic acid	4-day differentiated
VPA1000_2	ES-D3 - mESC	1000	valproic acid	4-day differentiated
VPA1000_3	ES-D3 - mESC	1000	valproic acid	4-day differentiated
VPA1000_4	ES-D3 - mESC	1000	valproic acid	4-day differentiated
VPA1000_5	ES-D3 - mESC	1000	valproic acid	4-day differentiated
VPA1000_6	ES-D3 - mESC	1000	valproic acid	4-day differentiated
VPA1000_8	ES-D3 - mESC	1000	valproic acid	4-day differentiated
VPA1000_10	ES-D3 - mESC	1000	valproic acid	4-day differentiated

Supplementary Table 7. Complete list of genes selected in WGCNA and differential gene expression analysis

Valproic Acid
AC106886.6, ACTL6B, ANP32E, APOBEC3B, APOBEC3G, ARID1A, ASMTL, ASXL1, ATF5, AURKB, AUTS2, BAG6, BAZ2B, BCAS3, BHMT, BMI1, BRD1, BRD3, BRD7, BRIP1, BRPF3, C17orf49, CALCOCO1, CARM1, CBX2, CBX3, CBX7, CCNB1, CCNT1, CCNT2, CEBPA, CHD3, CHD6, CHD7, CIC, CITED1, CITED2, COMMD3-BMI1, CRAMP1, CREB1, CREBBP, CREBZF, CRY1, CTCFL, CTNNB1, CUL4B, CYP1A1, CYP51A1, DAPK3, DDX4, DHX30, DNAJC2, DNMT3A, DPFF1, DTX3L, E2F4, EGFR, EGR1, EGR2, EHMT2, EID1, ELK4, EOMES, EP400, EPC1, EPC2, EPOP, ERG, ETF1, ETS1, EYA4, FBXO11, FOSL2, FOXA2, FUS, GABPA, GAMT, GATA3, GATA6, GLI3, GLYR1, GNAS, GRHL1, GRHL2, GSPT1, GTPBP3, H1-10, H1-4, HCFC1, HDAC7, HDAC9, HESX1, HEY2, HINFP, HMBOX1, HMG20B, HMGB3, HNF4A, HNMT, HNRNPC, HSF1, HUWE1, IKZF1, ING3, ING5, INO80B, INO80B-WBP1, INO80E, IRF4, ISL1, IWS1, JADE1, JMJD1C, KANSL1, KAT2A, KAT6A, KCTD21, KDM2A, KDM2B, KDM4A, KDM4B, KDM5C, KDM6A, KLHDC3, KMT2A, KMT2D, KMT5A, L3MBTL2, L3MBTL4, LDB1, LEF1, LMNA, LOXL2, MAP3K7, MAPT, MAT1A, MCM9, MECOM, MECP2, MED12, MEIS1, MEIS3, MEN1, METTL1, METTL7B, MIER3, MLH3, MSL1, MTA2, MTA3, MYB, MYC, MYOCD, NCOA1, NCOR1, NCOR2, NEUROD1, NFATC1, NFATC2, NFATC4, NFIA, NFKB2, NIPBL, NKX3-1, NOS1, NPM2, NR2C1, NR4A3, NSD1, NSUN7, NUCKS1, OGDH, OGT, PADI2, PADI3, PAK1, PARP9, PATZ1, PAX3, PAX5, PAX6, PBRM1, PCGF1, PCGF2, PCGF5, PCIF1, PCMTD2, PER2, PHF2, PHF8, PHIP, PIK3CA, PKNOX1, POLQ, POR, PPARGC1A, PRDM10, PRDM5, PRKAA1, PRKAA2, PRKCA, PRKCB, PRKCD, RAB3B, RARA, RBL1, REC8, RUNX2, RUVBL2, SATB2, SETMAR, SFMBT2, SIRT2, SIRT6, SKI, SMARCA2, SMARCA4, SMARCD1, SMARCD3, SMC1A, SMYD3, SNCA, SNRPD3, SOX10, SOX9, SP2, SPHK2, SPIN3, SPIN4, SRCAP, STAG2, STAT5B, SUPT6H, SUZ12, TADA2B, TAF1A, TAL1, TCF4, TCF7L2, TDRD12, TET1, TET3, TGFB1, TGS1, THRB, TLK1, TLK2, TNP1, TNRC18, TOP1, TP53, TPMT, TRDMT1, TRIM27, TRMT2B, TSHZ1, TSHZ2, TTC5, TWISTNB, UHRF1BP1, UPF1, USP3, USP36, USP7, USP9X, VEGFA, VPS72, WBP2, WDR4, WDTC1, WIZ, YWHAE, ZBTB1, ZMIZ1, ZMYND11, ZMYND8, ZNF750, ZNHIT1
Carbamazepine
APOBEC3B, ATM, BHMT2, BRCA1, BRD8, CBX5, CHD2, CTCFL, CTNNB1, ELK4, EOMES, ETS1, FLI1, FOXA2, FOXO3, FUS, GRHL2, GRHL3, GSPT1, HESX1, IFI16, ISL1, LEF1, MECOM, MEIS1, MTA3, NUCKS1, OVOL2, PATZ1, PAX3, PAX6, POLR2E, PRKD1, REC8, SMARCA2, SP1, TAL1, TGFB1, TSHZ1, YWHAE
Phenytoin
BRCC3, BRD8, BRDT, CHEK1, CYP1A1, DMRT1, DNMT3L, EGFR, EOMES, EYA4, EZH1, FEZF2, FOXC1, GCM1, HES5, JMJD1C, KLF2, KPNA7, MITF, MORC1, NEUROD1, NR5A2, NSUN6, NUPR1, PAX6, PKNOX1, PRDM14, PRKD2, PTF1A, SFMBT2, SSBP1, TDRD12, TET2, TRIP4, TSHZ1

[illegible]