Supplemental Figure Legends

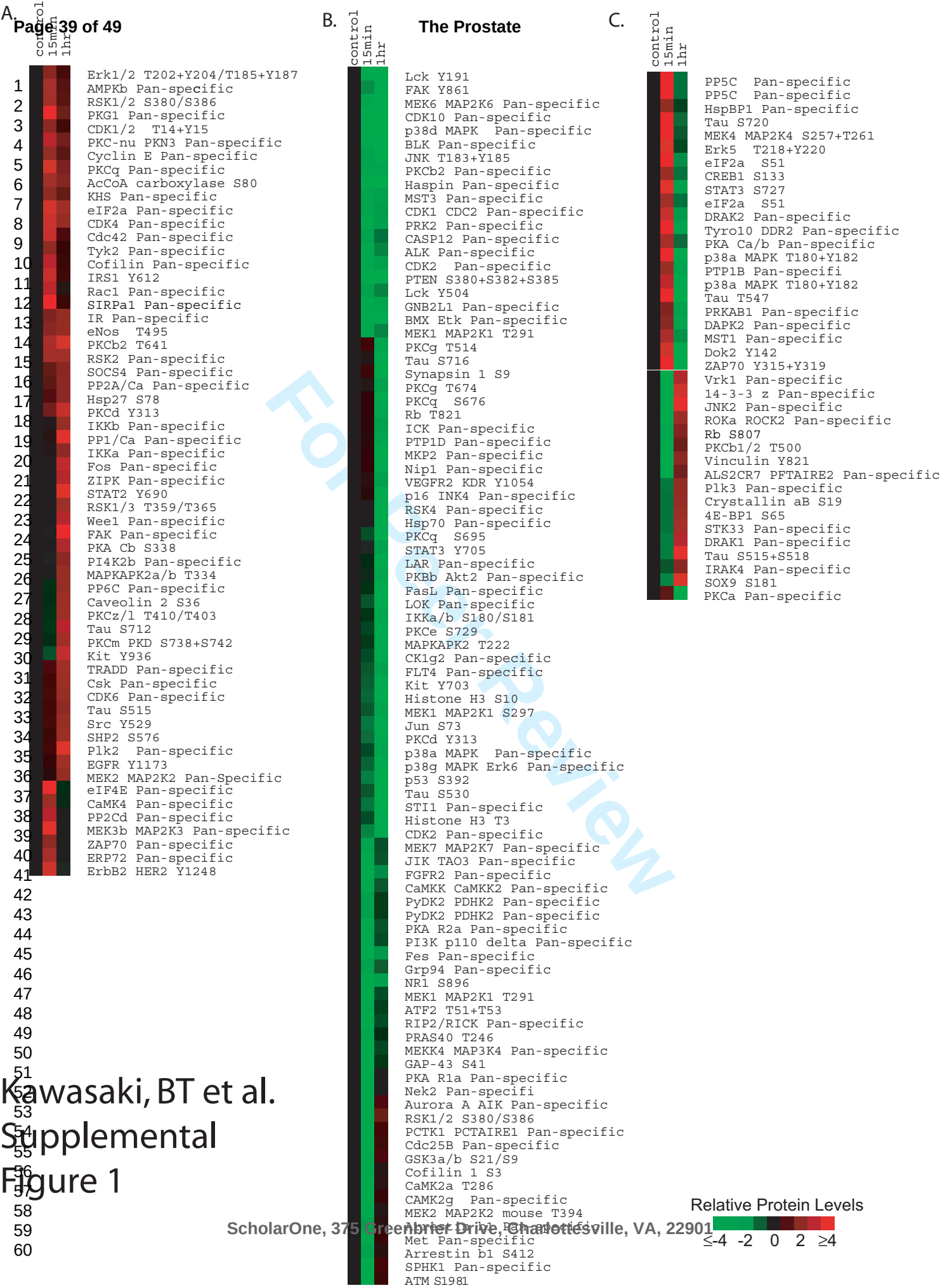
Figure 1: Protein microarray analysis of parthenolide-mediated cytotoxicity. (A) Protein levels that increase at either time point and (B) decrease at either time point. (C) Protein with opposite expression levels at 15 and 60 min. Relative protein level changes are indicated by the color bar. Red indicates an increase, green indicates a decrease and black indicates no change. Time points (0, 15 and 60 min) are shown at the top.

Figure 2: Gene expression profile of parthenolide-mediated cytotoxicity. Cells ($6x10^6$) were plated on a 150 mm plate. PTL (10 μM) was added to DU145 cells for 1, 4 or 8 hr and DMSO (0.1%) was used as the untreated control. Relative protein level changes are indicated by the color bar. Red indicates an increase, green indicates a decrease and black indicates no change. Gray indicates missing data. All named genes showing at least a 2-fold change in expression. Panels (a-d) indicate decreases in gene expression and panel (e) an increase.

Figure 3: PP2 targets cancer stem population in $CD44^{hi}$ tumor-initiating cells. Sorted $CD44^{hi}$ DU145 cells were treated with various concentrations (0-20 μM) of PP2 for 72 hr. Cells were plated at a density of 500 cells per well and viability was measured using Promega's Cell-Titer Glo assay. The Cell-Titer Glo reagent was added to each well and equilibrated for 30 min before measurement was taken. Error bars represent standard deviations (SD). Y-axis represents percent viability normalized to untreated (0.1% DMSO) control. All experiments were done in triplicate and were performed at least two times, with representative experiment shown.

Table 1: Transcriptional regulation of parthenolide-mediated cytotoxicity. Transcriptional binding activity of 354 transcription factors was measured using Panomics DNA/protein combo array. (A) Decreases and (B) increasing of binding activity are shown at two time points (30 and 90 min). Fold changes are in respect to the untreated (0.1% DMSO) control. Changes in intensity spots were determined by densitometry using ImageQuant TL (Amersham Biosciences, Piscataway, NJ).

Table 2: Binding sites for transcription factors that are modulated by parthenolide treatment. Using Gene Set Enrichment Analysis (GSEA), we used our PTL gene set at 1, 4, and 8 hr and searched for transcription factor targets. GSEA was performed as described [59, 60].The table indicates the transcription factor binding sites (right panel), number of genes containing the indicated TF site (middle panel) and the names of those genes (left panel).



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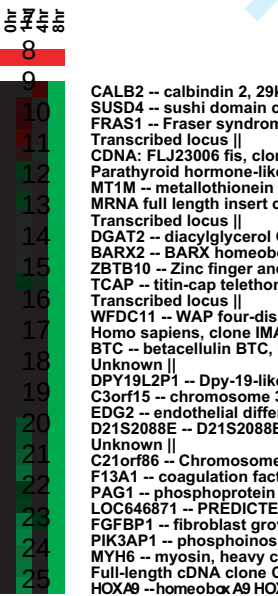
Supplemental Figure 1

Supplemental Figure 2a

Supplemental Figure 2b



TCF7L2 Transcription factor 7 like2 T cell specific, HMG box ||
CDNA FLJ27381 fis, clone UBA07680 ||
BMF -- Bcl2 modifying factor BMF, transcript variant 4, mRNA. ||
TUBA1B -- tubulin, alpha 1b TUBA1B, mRNA. ||
PAP2D -- phosphatidic acid phosphatase type 2 PAP2D, transcript variant 2, mRNA. ||
MNS1 -- meiosis-specific nuclear structural 1 MNS1, mRNA. ||
Transcribed locus ||
CDNA FLJ31353 fis, clone MESAN2000264 ||
SDPR -- serum deprivation response phosphatidylserine binding protein SDPR, mRNA. ||
CCDC121 -- coiled-coil domain containing 121 CCDC121, mRNA. ||
RNF144B -- ring finger 144B RNF144B, mRNA. ||
EVI1 -- ecotropic viral integration site 1 EVI1, transcript variant 2, mRNA. ||
Unknown ||
HOXA3 -- homeobox A3 HOXA3, transcript variant 3, mRNA. ||
PDE4B -- phosphodiesterase 4B, cAMP-specific phosphodiesterase E4 dunce homolog, Drosophila PDE4B, transcript variant b, mRNA.
HEXIM2 -- hexamthylene bis-acetamide inducible 2 HEXIM2, mRNA. ||
HIST1H4B -- histone cluster 1, H4b HIST1H4B, mRNA. ||
SOCS2 -- suppressor of cytokine signaling 2 SOCS2, mRNA. ||
C13orf15 -- Chromosome 13 open reading frame 15 ||
CDC42EP3 -- CDC42 effector protein Rho GTPase binding 3 CDC42EP3, mRNA. ||
FAM26B -- family with sequence similarity 26, member B FAM26B, mRNA. ||
DKK1 -- dickkopf homolog 1 Xenopus laevis DKK1, mRNA. ||
PLK2 -- polo-like kinase 2 Drosophila PLK2, mRNA. ||
FJX1 -- four jointed box 1 Drosophila FJX1, mRNA. ||
PATZ1 -- POZ BTB and AT hook containing zinc finger 1 PATZ1, transcript variant 2, mRNA. ||
RND3 -- Rho family GTPase 3 RND3, mRNA. ||
SPIN4 -- spindlin family, member 4 SPIN4, mRNA. ||
CXCR4 -- chemokine C-X-C motif receptor 4 CXCR4, transcript variant 2, mRNA. ||
IRS1 -- insulin receptor substrate 1 IRS1, mRNA. ||
HS3ST1 -- heparan sulfate glucosamine 3-O-sulfotransferase 1 HS3ST1, mRNA. ||
ENC1 -- ectodermal-neural cortex with BTB-like domain ENC1, mRNA. ||
CXXC6 -- CXXC finger 6 CXXC6, mRNA. ||
G0S2 -- G0/G1switch 2 G0S2, mRNA. ||
ENC1 -- ectodermal-neural cortex with BTB-like domain ENC1, mRNA. ||
Transcribed locus ||
NRG2 -- neuregulin 2 NRG2, transcript variant 2, mRNA. ||
HELLS -- helicase, lymphoid-specific HELLS, mRNA. ||
CDNA clone IMAGE:6254031 ||
LOC392454 -- PREDICTED: similar to Proliferating cell nuclear antigen PCNA Cyclin LOC392454, mRNA. ||
SYNCRIP -- synaptotagmin binding, cytoplasmic RNA interacting protein SYNCRIP, mRNA. ||
UHRF1 -- ubiquitin-like, containing PHD and RING finger domains, 1 UHRF1, transcript variant 1, mRNA. ||
ASB9 -- ankyrin repeat and SOCS box-containing 9 ASB9, transcript variant 1, mRNA. ||
PTPN14 -- protein tyrosine phosphatase, non-receptor type 14 PTPN14, mRNA. ||
IVNS1ABP -- influenza virus NS1A binding protein IVNS1ABP, mRNA. ||
PJA1 -- praja 1 PJA1, transcript variant 3, mRNA. ||
ITGA2 -- integrin, alpha 2 CD49B, alpha 2 subunit of VLA-2 receptor ITGA2, mRNA. ||
STK33 -- serine/threonine kinase 33 STK33, mRNA. ||
ST3GAL5 -- ST3 beta-galactoside alpha-2,3-sialyltransferase 5 ST3GAL5, transcript variant 2, mRNA. ||
HIST1H2AK -- histone cluster 1, H2ak HIST1H2AK, mRNA. ||
SLFN12 -- schlafen family member 12 SLFN12, mRNA. ||
GLI2 -- GLI-Kruppel family member GLI2 GLI2, mRNA. ||
RAB27B -- RAB27B, member RAS oncogene family RAB27B, mRNA. ||
IVNS1ABP -- influenza virus NS1A binding protein IVNS1ABP, mRNA. ||
FAM111B -- family with sequence similarity 111, member B FAM111B, mRNA. ||
CDNA FLJ33220 fis, clone ASTRO2000482 ||
Transcribed locus, strongly similar to XP_529961.2 hypothetical protein [Pan troglodytes] ||
PDE9A -- phosphodiesterase 9A PDE9A, transcript variant 15, mRNA. ||
PCSK9 -- proprotein convertase subtilisin/kexin type 9 PCSK9, mRNA. ||
AFAP1L2 -- actin filament associated protein 1-like 2 AFAP1L2, transcript variant 2, mRNA. ||
DKFZp434H1419 -- Hypothetical protein DKFZp434H1419 ||
E2F7 -- E2F transcription factor 7 E2F7, mRNA. ||
TUBB2A -- tubulin, beta 2A TUBB2A, mRNA. ||
LOC442308 -- similar to tubulin, beta 5 LOC442308 on chromosome 7. ||
SPIN4 -- spindlin family, member 4 SPIN4, mRNA. ||
ETS2 -- v-ets erythroblastosis virus E26 oncogene homolog 2 avian ETS2, mRNA. ||
LOC399942 -- PREDICTED: similar to Tubulin alpha-2 chain Alpha-tubulin 2 LOC399942, mRNA. ||
LOC92755 -- PREDICTED: similar to tubulin, beta 5 LOC92755, mRNA. ||
BDNF -- brain-derived neurotrophic factor BDNF, transcript variant 6, mRNA. ||
Unknown ||
PBK -- PDZ binding kinase PBK, mRNA. ||
KCNQ2 -- potassium voltage-gated channel, KQT-like subfamily, member 2 KCNQ2, transcript variant 4, mRNA. ||
TUBA1C -- tubulin, alpha 1c TUBA1C, mRNA. ||
CORO2A -- Coronin, actin binding protein, 2A ||
PRICKLE1 -- prickle homolog 1 Drosophila PRICKLE1, mRNA. ||
E2F8 -- E2F transcription factor 8 E2F8, mRNA. ||
Unknown ||
Full-length cDNA clone CS0DC025YP03 of Neuroblastoma Cot 25-normalized of Homo sapiens human ||
CCNE2 -- cyclin E2 CCNE2, mRNA. ||
TNFRSF10D -- tumor necrosis factor receptor superfamily, member 10d, decoy with truncated death domain TNFRSF10D, mRNA. ||
SKP2 -- S-phase kinase-associated protein 2 p45 SKP2, transcript variant 2, mRNA. ||
KIAA0101 -- KIAA0101 KIAA0101, transcript variant 2, mRNA. ||
MT2A -- metallothionein 2A MT2A, mRNA. ||
C19orf21 -- chromosome 19 open reading frame 21 C19orf21, mRNA. ||
CAV1 -- caveolin 1, caveolae protein, 22kDa CAV1, mRNA. ||
RRM2 -- ribonucleotide reductase M2 polypeptide RRM2, mRNA. ||
CCDC15 -- coiled-coil domain containing 15 CCDC15, mRNA. ||
CRISPLD1 -- cysteine-rich secretory protein LCCL domain containing 1 CRISPLD1, mRNA. ||
WSCD1 -- WSC domain containing 1 WSCD1, mRNA. ||
Unknown ||
TUBA1C -- tubulin, alpha 1c TUBA1C, mRNA. ||
CXCL6 -- chemokine C-X-C motif ligand 6 granulocyte chemotactic protein 2 CXCL6, mRNA. ||
TUBA4A -- tubulin, alpha 4a TUBA4A, mRNA. ||
LMO3 -- LIM domain only 3 rhombotin-like 2 LMO3, transcript variant 2, mRNA. ||
STATH -- statherin STATH, transcript variant 1, mRNA. ||
LOC728673 -- PREDICTED: hypothetical protein LOC728673 LOC728673, mRNA. ||
RECK -- reversion-inducing-cysteine-rich protein with kazal motifs RECK, mRNA. ||
PATZ1 -- POZ BTB and AT hook containing zinc finger 1 PATZ1, transcript variant 4, mRNA. ||
TUBB -- tubulin, beta TUBB, mRNA. ||
TUBB -- tubulin, beta TUBB, mRNA. ||
FLRT3 -- fibronectin leucine rich transmembrane protein 3 FLRT3, transcript variant 1, mRNA. ||
ZBTB2 -- zinc finger and BTB domain containing 2 ZBTB2, mRNA. ||
Transcribed locus, weakly similar to NP_149938.1 dehydrogenase subunit 3 [Trichosurus vulpecula] ||
PAG1 -- phosphoprotein associated with glycosphingolipid microdomains 1 PAG1, mRNA. ||
MLKL -- mixed lineage kinase domain-like MLKL, mRNA. ||
CDNA FLJ11812 fis, clone HEMBA1006364 ||
PDE4D -- phosphodiesterase 4D, cAMP-specific phosphodiesterase E3 dunce homolog, Drosophila PDE4D, transcript variant 2, mRNA.
TSC22D1 -- TSC22 domain family, member 1 TSC22D1, transcript variant 2, mRNA. ||
IL24 -- interleukin 24 IL24, transcript variant 2, mRNA. ||
DYNC2H1 -- dynein, cytoplasmic 2, heavy chain 1 DYNC2H1, mRNA. ||
ABHD10 -- abhydrolase domain containing 10 ABHD10, mRNA. ||
TMC5 -- transmembrane channel-like 5 TMC5, transcript variant 3, mRNA. ||
Clone HQ0456 PRO0456 ||
Transcribed locus, moderately similar to XP_001105177.1 similar to Ig heavy chain V-II region ARH-77 precursor [Macaca mulatta
TYMS -- thymidylate synthetase TYMS, mRNA. ||
SPRED1 -- sprouty-related, EVH1 domain containing 1 SPRED1, mRNA. ||
Unknown ||
TRIM6 -- tripartite motif-containing 6 TRIM6, transcript variant 2, mRNA. ||
HIST1H4C -- histone cluster 1, H4c HIST1H4C, mRNA. ||
TOP2A -- topoisomerase DNA II alpha 170kDa TOP2A, mRNA. ||
C15orf52 -- chromosome 15 open reading frame 52 C15orf52, mRNA. ||
ST3GAL5 -- ST3 beta-galactoside alpha-2,3-sialyltransferase 5 ST3GAL5, transcript variant 2, mRNA. ||
HIST1H3I -- histone cluster 1, H3i HIST1H3I, mRNA. ||
UHRF1 -- ubiquitin-like, containing PHD and RING finger domains, 1 UHRF1, transcript variant 1, mRNA. ||
HCP5 -- HLA complex P5 HCP5, mRNA. ||
Transcribed locus, weakly similar to NP_062278.2 2 [Mus musculus] ||
LBH -- limb bud and heart development homolog mouse LBH, mRNA. ||
IFI44 -- interferon-induced protein 44 IFI44, mRNA. ||
FASTKD2 -- FAST kinase domains 2 FASTKD2, mRNA. ||
GAGE12F -- G antigen 12F GAGE12F, mRNA. ||
ANP32A -- Acidic leucine-rich nuclear phosphoprotein 32 family, member A ||
DYNC2H1 -- dynein, cytoplasmic 2, heavy chain 1 DYNC2H1, mRNA. ||
TUBGCP6 -- tubulin, gamma complex associated protein 6 TUBGCP6, mRNA. ||
IFI16 -- interferon, gamma-inducible protein 16 IFI16, mRNA ||

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Supplemental
Figure 2c

Relative Gene Expression

≤-4 -2 0 2 ≥4

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Supplemental Figure 2d

C3orf55 -- chromosome 3 open reading frame 55 C3orf55, mRNA. ||
SP110 -- SP110 nuclear body protein SP110, transcript variant a, mRNA. ||
FAM107B -- family with sequence similarity 107, member B FAM107B, mRNA. ||
SLC4A4 -- solute carrier family 4, sodium bicarbonate cotransporter, member 4 SLC4A4, transcript variant 2, mRNA. ||
L3MBTL4 -- l3mbt-like 4 Drosophila L3MBTL4, mRNA. ||
SAMD9 -- sterile alpha motif domain containing 9 SAMD9, mRNA. ||
C14orf72 -- PREDICTED: chromosome 14 open reading frame 72 C14orf72, mRNA. ||
CFTR -- cystic fibrosis transmembrane conductance regulator ATP-binding cassette sub-family C, member 7 CFTR, mRNA. ||
PPAP2B -- phosphatidic acid phosphatase type 2B PPAP2B, transcript variant 2, mRNA. ||
TMEM140 -- transmembrane protein 140 TMEM140, mRNA. ||
RIN2 -- Ras and Rab interactor 2 RIN2, mRNA. ||
FAM108C1 -- family with sequence similarity 108, member C1 FAM108C1, mRNA. ||
TCEAL8 -- transcription elongation factor A SII-like 8 TCEAL8, transcript variant 2, mRNA. ||
CDNA FLJ37310 fis, clone BRAMY2016706 ||
SAMD9 -- sterile alpha motif domain containing 9 SAMD9, mRNA. ||
IL1RAP -- interleukin 1 receptor accessory protein IL1RAP, transcript variant 1, mRNA. ||
TMEM154 -- transmembrane protein 154 TMEM154, mRNA. ||
SYTL2 -- synaptotagmin-like 2 SYTL2, transcript variant b, mRNA. ||
Unknown ||
HDAC10 -- histone deacetylase 10 HDAC10, mRNA. ||
PCNA -- proliferating cell nuclear antigen PCNA, transcript variant 2, mRNA. ||
OBSL1 -- Obscurin-like 1 ||
ODC1 -- ornithine decarboxylase 1 ODC1, mRNA. ||
C10orf72 -- chromosome 10 open reading frame 72 C10orf72, transcript variant 2, mRNA. ||
USP16 -- ubiquitin specific peptidase 16 USP16, transcript variant 2, mRNA. ||
EXT1 -- exostoses multiple 1 EXT1, mRNA. ||
GOLT1A -- golgi transport 1 homolog A S. cerevisiae GOLT1A, mRNA. ||
SNX6 -- sorting nexin 6 SNX6, transcript variant 2, mRNA. ||
ATAD2 -- ATPase family, AAA domain containing 2 ATAD2, mRNA. ||
FLJ00254 protein ||
TWIST2 -- twist homolog 2 Drosophila TWIST2, mRNA. ||
TMEPAI -- transmembrane, prostate androgen induced RNA TMEPAI, transcript variant 3, mRNA. ||
SLC25A12 -- solute carrier family 25 mitochondrial carrier, Aralar, member 12 SLC25A12, mRNA. ||
HOXA4 -- Homeobox A4 ||
ALDH1A3 -- aldehyde dehydrogenase 1 family, member A3 ALDH1A3, mRNA. ||
Transcribed locus ||
TRA2A -- transformer-2 alpha TRA2A, mRNA. ||
MRNA; cDNA DKFZp686I18116 from clone DKFZp686I18116 ||
EDIL3 -- EGF-like repeats and discoidin I-like domains 3 EDIL3, mRNA. ||
KRT7 -- keratin 7 KRT7, mRNA. ||
PCDHA10 -- protocadherin alpha 10 PCDHA10, transcript variant 3, mRNA. ||
PCDHAC2 -- protocadherin alpha subfamily C, 2 PCDHAC2, transcript variant 2, mRNA. ||
GRAMD3 -- GRAM domain containing 3 GRAMD3, mRNA. ||
SPG3A -- spastic paraplegia 3A autosomal dominant SPG3A, transcript variant 1, mRNA. ||
DST -- Dystonin ||
CPS1 -- carbamoyl-phosphate synthetase 1, mitochondrial CPS1, mRNA. ||
TGFA -- transforming growth factor, alpha TGFA, transcript variant 2, mRNA. ||
Unknown ||
NPTX1 -- neuronal pentraxin I NPTX1, mRNA. ||
PLEKHK1 pleckstrin homology domain containing, family K member 1 PLEKHK1, mRNA ||

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HBP1 -- HMG-box transcription factor 1 HBP1, mRNA. ||
C8orf59 -- Chromosome 8 open reading frame 59 ||
CA13 -- carbonic anhydrase XIII CA13, mRNA. ||
Unknown ||
TYRP1 -- tyrosinase-related protein 1 TYRP1, mRNA. ||
CXCR3 -- chemokine C-X-C motif receptor 3 CXCR3, mRNA. ||
EDNRB -- endothelin receptor type B EDNRB, transcript variant 2, mRNA. ||
ADCYAP1R1 -- Adenylate cyclase activating polypeptide 1 pituitary receptor type I ||
C16orf70 -- chromosome 16 open reading frame 70 C16orf70, mRNA. ||
NTS -- neurotensin NTS, mRNA. ||
CDNA FLJ40810 fis, clone TRACH2009743 ||
CRY1 -- cryptochrome 1 photolyase-like CRY1, mRNA. ||
CD69 -- CD69 molecule CD69, mRNA. ||
Transcribed locus ||
GNPDA1 -- glucosamine-6-phosphate deaminase 1 GNPDA1, mRNA. ||
Transcribed locus ||
W92806 zh80f05.s1 Soares_fetal_liver_spleen_1NFLS_S1 Homo sapiens cDNA clone IMAGE:418401 3' similar to contains Alu repetitive element;, mRNA
Homo sapiens, clone IMAGE:6155889, mRNA ||
MXI1 -- MAX interactor 1 MXI1, transcript variant 3, mRNA. ||
CD1A -- CD1a molecule CD1A, mRNA. ||
SPHK1 -- sphingosine kinase 1 SPHK1, transcript variant 1, mRNA. ||
ECE2 -- endothelin converting enzyme 2 ECE2, transcript variant 3, mRNA. ||
KLRK1 -- killer cell lectin-like receptor subfamily K, member 1 KLRK1, mRNA. ||
AHI1 -- Abelson helper integration site 1 AHI1, mRNA. ||
TMEM111 -- transmembrane protein 111 TMEM111, mRNA. ||
MTHFR -- 5,10-methylenetetrahydrofolate reductase NADPH MTHFR, mRNA. ||
GNAL -- guanine nucleotide binding protein G protein, alpha activating activity polypeptide, olfactory type GNAL, transcript variant 2, mRNA. II
C6orf145 -- chromosome 6 open reading frame 145 C6orf145, mRNA. ||
UBE2H -- ubiquitin-conjugating enzyme E2H UBC8 homolog, yeast UBE2H, transcript variant 2, mRNA. ||
ZFP36 -- zinc finger protein 36, C3H type, homolog mouse ZFP36, mRNA. ||
ALU7_HUMAN P39194 Alu subfamily SQ sequence contamination warning entry, partial 12% [THC2286962] ||
ADAM32 -- ADAM metallopeptidase domain 32 ADAM32, mRNA. ||
PER3 -- period homolog 3 Drosophila PER3, mRNA. ||
ADRA1B -- adrenergic, alpha-1B-, receptor ADRA1B, mRNA. ||
C19orf61 -- chromosome 19 open reading frame 61 C19orf61, mRNA. ||
TESK1 -- testis-specific kinase 1 TESK1, mRNA. ||
CRY1 -- cryptochrome 1 photolyase-like CRY1, mRNA. ||
GNAL -- guanine nucleotide binding protein G protein, alpha activating activity polypeptide, olfactory type GNAL, transcript variant 2, mRNA. II
HSPA8 -- heat shock 70kDa protein 8 HSPA8, transcript variant 1, mRNA. ||
DUSP5 -- dual specificity phosphatase 5 DUSP5, mRNA. ||
LNX1 -- ligand of numb-protein X 1 LNX1, mRNA. ||
DNAJB1 -- DnaJ Hsp40 homolog, subfamily B, member 1 DNAJB1, mRNA. ||
KIAA1370 -- KIAA1370 KIAA1370, mRNA. ||
HSPA6 -- heat shock 70kDa protein 6 HSP70B' HSPA6, mRNA. ||
JMJD6 -- jumonji domain containing 6 JMJD6, transcript variant 2, mRNA. ||
DNAJB9 -- DnaJ Hsp40 homolog, subfamily B, member 9 DNAJB9, mRNA. ||
CHD2 -- chromodomain helicase DNA binding protein 2 CHD2, transcript variant 1, mRNA. ||
Transcribed locus ||
WDR20 -- WD repeat domain 20 WDR20, transcript variant 1, mRNA. ||
KIAA1370 -- KIAA1370 KIAA1370, mRNA. ||
IPMK -- Inositol polyphosphate multikinase ||
NUFIP2 -- nuclear fragile X mental retardation protein interacting protein 2 NUFIP2, mRNA. ||
LOC731450 -- PREDICTED: hypothetical protein LOC731450 LOC731450, mRNA. ||
FBXO30 -- F-box protein 30 FBXO30, mRNA. ||
FAM53C -- family with sequence similarity 53, member C FAM53C, mRNA. ||
Full length insert cDNA clone YZ04E02 ||
CHD2 -- chromodomain helicase DNA binding protein 2 CHD2, transcript variant 1, mRNA. ||
C21orf91 -- chromosome 21 open reading frame 91 C21orf91, transcript variant 3, mRNA. ||
GABPB2 -- GA binding protein transcription factor, beta subunit 2 GABPB2, transcript variant beta-2, mRNA. ||
Full-length cDNA clone CS0DF022YM06 of Fetal brain of Homo sapiens human ||
ZNF654 -- zinc finger protein 654 ZNF654, mRNA. ||
C6orf204 -- chromosome 6 open reading frame 204 C6orf204, transcript variant 2, mRNA. ||
Transcribed locus ||
ZCCHC2 -- zinc finger, CCHC domain containing 2 ZCCHC2, mRNA. ||
RASSF1 -- Ras association RalGDS/AF-6 domain family 1 RASSF1, transcript variant B, mRNA. ||
KIAA0323 -- KIAA0323 ||
RELT -- RELT tumor necrosis factor receptor RELT, transcript variant 2, mRNA. ||
WDR53 -- WD repeat domain 53 WDR53, mRNA. ||
ZFAND2A -- zinc finger, AN1-type domain 2A ZFAND2A, mRNA. ||
KLHL24 -- kelch-like 24 Drosophila KLHL24, mRNA. ||
LOC153546 -- Hypothetical protein LOC153546 ||
ANKRD12 -- ankyrin repeat domain 12 ANKRD12, transcript variant 2, mRNA. ||
PPP1R15A -- protein phosphatase 1, regulatory inhibitor subunit 15A PPP1R15A, mRNA. ||
EIF5 -- eukaryotic translation initiation factor 5 EIF5, transcript variant 2, mRNA. ||
KLF9 -- Kruppel-like factor 9 KLF9, mRNA. ||
NR1D2 -- nuclear receptor subfamily 1, group D, member 2 NR1D2, mRNA. ||
DOK3 -- Docking protein 3 ||
GPR146 -- G protein-coupled receptor 146 GPR146, mRNA. ||
C9orf3 -- chromosome 9 open reading frame 3 C9orf3, mRNA. ||
GDA -- guanine deaminase GDA, mRNA. ||
SAFB2 -- scaffold attachment factor B2 SAFB2, mRNA. ||
GABARAPL1 -- GABAA receptor-associated protein like 1 GABARAPL1, mRNA. ||
Unknown ||
METRNL -- meteorin, glial cell differentiation regulator-like METRNL, mRNA. ||
Transcribed locus ||
AHSA1 -- AHA1, activator of heat shock 90kDa protein ATPase homolog 1 yeast AHSA1, mRNA. ||
MGC14376 -- hypothetical protein MGC14376 MGC14376, transcript variant 2, mRNA. ||
SMURF1 -- SMAD specific E3 ubiquitin protein ligase 1 SMURF1, transcript variant 2, mRNA. ||
LOC729513 -- PREDICTED: similar to PI-3-kinase-related kinase SMG-1 LOC729513, mRNA. ||
ZNF295 -- zinc finger protein 295 ZNF295, transcript variant 3, mRNA. ||
RELL2 -- RELT-like 2 RELL2, mRNA. ||
IGF2BP3 -- insulin-like growth factor 2 mRNA binding protein 3 IGF2BP3, mRNA. ||
LSMD1 -- LSM domain containing 1 LSMD1, mRNA. ||
KLF2 -- Kruppel-like factor 2 lung KLF2, mRNA. ||
C21orf30 -- Chromosome 21 open reading frame 30 ||
CNNM2 -- cyclin M2 CNNM2, transcript variant 2, mRNA. ||
LOC285908 -- hypothetical protein LOC285908 LOC285908, mRNA. ||
Clone 24533 mRNA sequence ||
GABARAPL1 -- GABAA receptor-associated protein like 1 GABARAPL1, mRNA. ||
Transcribed locus, weakly similar to XP_213396.4 similar to diptheria toxin resistance protein required for diphthamide biosynthesis Saccharomyces-like
FBRS -- fibrosin FBRS, mRNA. ||
C6orf130 -- chromosome 6 open reading frame 130 C6orf130, mRNA. ||
MIAT -- myocardial infarction associated transcript non-protein coding MIAT on chromosome 22. ||
STGC3 -- PREDICTED: hypothetical STGC3 STGC3, misc RNA. ||
HMOX1 -- heme oxygenase decycling 1 HMOX1, mRNA. ||
C9orf150 -- chromosome 9 open reading frame 150 C9orf150, mRNA. ||
STK40 -- serine/threonine kinase 40 STK40, mRNA. ||
DNAJB4 -- DnaJ Hsp40 homolog, subfamily B, member 4 DNAJB4, mRNA. ||
HSPA1L -- heat shock 70kDa protein 1-like HSPA1L, mRNA. ||
HSPH1 -- heat shock 105kDa/110kDa protein 1 HSPH1, mRNA. ||
HSPA1A -- heat shock 70kDa protein 1A HSPA1A, mRNA. ||
DDIT3 -- DNA-damage-inducible transcript 3 DDIT3, mRNA. ||
ZNF295 -- zinc finger protein 295 ZNF295, transcript variant 3, mRNA. ||
BANP -- BTG3 associated nuclear protein BANP, transcript variant 1, mRNA. ||
OSGIN1 -- oxidative stress induced growth inhibitor 1 OSGIN1, transcript variant 3, mRNA. ||
HSPA1A -- heat shock 70kDa protein 1A HSPA1A, mRNA. ||
MRNA; cDNA DKFZp667D0824 from clone DKFZp667D0824 ||
HSPA1A -heat shock 70kDa protein 1A HSPA1A, mRNA ||

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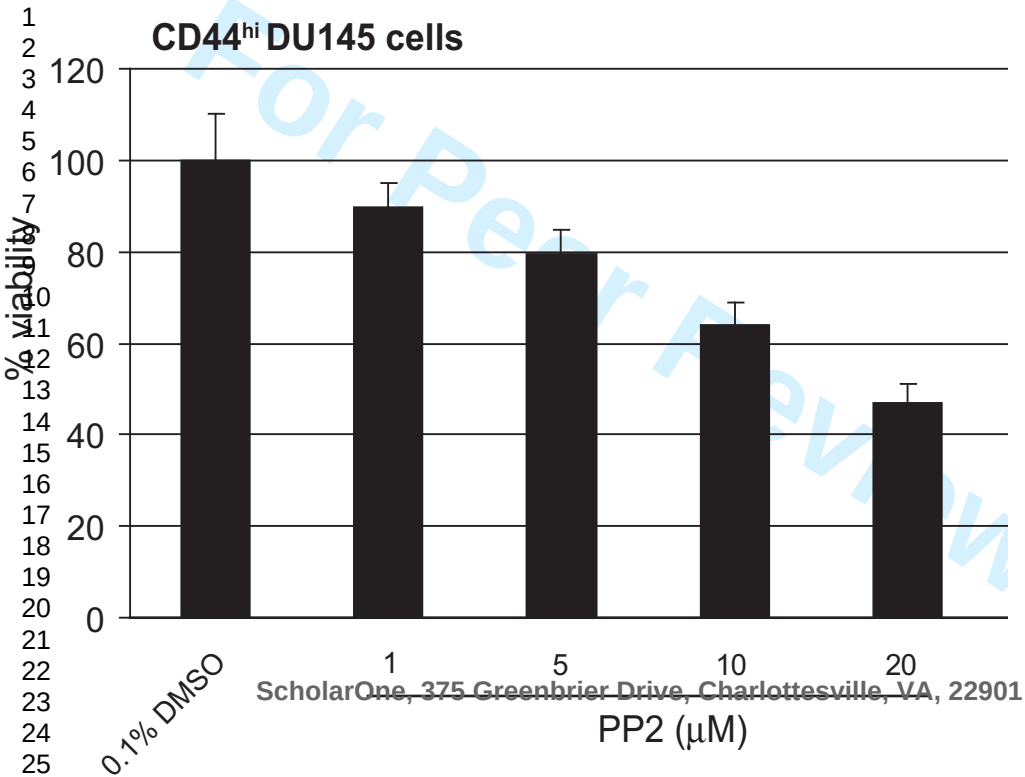

Kawasaki, BT et al. Supplemental Table: 1

A. Fold-decrease in binding

Transcription Factor	30 min	90 min
ABF-1	-132.76	-103.82
ACF	-4.08	undetectable
ADD1	-8.14	undetectable
ADR1	-17.30	undetectable
AF1	-7.66	-65.13
ALF1	-15.95	-207.06
CBF	-60.93	undetectable
CEBP-α	-6.07	undetectable
CPE	-36.63	undetectable
E4BP4	-35.38	-16.69
EBP-80	-13.35	-54.06
EGF BP	-12.04	undetectable
EIL1/2/3	-16.01	-1.82
ELK-1	-36.06	-58.06
HFH-2	-44.18	-34.55
HFN-1a/b/c	-43.79	-48.31
HiNF/D3	-4.28	-18.93
HOX4C	-168.39	undetectable
HOXA-4	-31.78	-22.92
LR1	-3.67	-2.18
MDBP	-55.97	-43.77
Mfh-1	-67.18	-114.65
NF-1	-87.58	undetectable
NF-1/L	-2.59	-2.08
NF-Atp	-20.69	-39.28
NF-E1/YY1	-18.35	-159.42
p55	-57.49	-18.09
PAX5	-2.15	-1.77
PBGD BP	-11.62	-26.07
PEBP	-35.60	-27.84
Skn	-14.11	1.22
Snail	-3.94	-1.79
Sp1	-14.68	undetectable
SRF	-3.14	-1.97
SRF SAP	-5.88	-38.56
STAT1/STAT3	-29.78	undetectable
Surf-2	-1.74	undetectable
TFE3	-56.69	undetectable
XBP1 X2BP	-30.58	1.46

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B. Fold-increase in binding

Transcription Factor	30 min	90 min
alpha-PAL	8.05	83.34
CEF2	15.07	195.62
c-myb BP	2.72	4.90
COUP-TF	61.38	129.82
E12	30.56	48.40
Fra-1/JUN	16.25	52.68
Freac-4	1.62	179.32
HOXD9/10	7.06	45.57
lactoferrin BP	167.85	99.02
MTF	13.70	104.29
NCAM BP	8.31	7.33
p53	73.26	1.00
PU.1	1.15	undetectable
RSRFC4	45.61	79.90
TEF1	1.07	undetectable
TFIID	5.90	63.11
TR/DR-4	89.42	67.21
USF-1	1.98	2.73

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TF module	# genes	Genes containing module
SP1	52	*HBP1, HSPH1, BLM HDAC10, BDNF, NFKBIA, EDN2, SYNCRIP, SOCS2, MGC14376, SOX4, HOXA9, HOXA3, TSGA10, HOXA4, DZIP1, CDC42EP3, ANP32A, IVNS1ABP, HSPA8, SPG3A, BCOR, TCF7L2, PRICKLE1, RASSF1, DUSP5, NRG2, PRR3, MDM1, TMEPAI, EXT1, CRY1, TRA2A, PPAP2B, NANOS1, PER3, CIRBP, CNTNAP1, ATF3, IGFBP7, PRKCB1, DNAJA4, PLK2, GABARAPL1, RECK, GLS, TOP2A, NHS, EIF5, MT2A, ZFP36, KRT7*
ELK-1	13	*HBP1, HSPH1, BLM, HDAC10,DDIT3, SKP2, DNAJB1, EVC2, EIF2S1, RAD51L3, KIAA1033, CHORDC1, USP16, SOX4, DNAJB9*
C/EBP-β	17	*BDNF, NFKBIA, EDN2, SYNCRIP, SOCS2, PDE4D, DDR2, SERTAD4, CHD2, SLC25A12, SPRED1, ATAD2, GOS2, DLX1, BMF, SDPR, PAFAH2*
GFI1	16	*HBP1, BDNF, MGC14376, SOX4, HOXA9, HOXA3, TSGA10, PDE4D, DDR2, SERTAD4, LMO3, RORA, HOXB3, CDH13, DNAJB4, PCDHAC2*
C/EBP-a	21	*BDNF, NFKBIA, EDN2, MGC14376, DDIT3, SKP2, PDE4D, CHD2, SLC25A12, SPRED1, ATAD2, G0S2, LMO3, LIPG, PTX3, SOX4, HOXA3, TSGA10, DDR2, DLX1, RORA*
MAZ	49	*HBP1, BDNF, NFKBIA, EDN2, SYNCRIP, SOCS2, MGC14376, SOX4, HOXA9, HOXA4, DIZIP1, CDC42EP3, ANP32A, IVNS1ABP, HSPA8, SPG3A, BCOR, TCF7L2, DDIT3, DNAJB1, EVC2, DDR2, CHD2, SLC25A12, DLX1, BMF, LMO3, RORA, NPTX1, ZBTB10, PJA1, EVI1, RBP4, IL24, CNNM2, PIK3AP1, MYH6, MXI1, UBE2H, IRS1, EIF4E, HIST2H2AC, CCNE2, DKK1, GNAL, ADAMTS1, F13A1, FGFBP1, TRIM6*
HLF	15	*HOXA4, PRICKLE1, DDIT3, PDE4D, SERTAD4, CHD2, SPRED1, ATAD2, DLX1, RORA, NPTX1, ALDH1A1, ZNF295, HS6ST2, CXCL6*
ETS2	20	*BDNF, MGC14376, HOXA4, DZIP1, RASSF1, PDE4D, CHD2, SDPR, LMO3, RORA, IL24, RIN2, HGF, CCL20, RIMS2, CXCR3, QPCT, CCL2, CD86, CX3CR1*
TCF3	57	*BDNF, SYNCRIP, MGC14376, SOX4, HOXA3, CDC42EP3, ANP32A, IVNS1ABP, DUSP5, NRG2, PRR3, MDM1, TMEPAI, EXT1, SKP2, SERTAD4, CHD2, SPRED1, BMF, SDPR, LMO3, HOXB3, CDH13, NPTX1, CNNM2, PIK3AP1, MYH6, ALDH1A1, ZNF295, HGF, CCL20, RIMS2, MTHFR, ODC1, BCL2, ITGA2, PLEKHK1, CXCR4, WDR20, PDE4B, BARX2, MGC42157, PAX9, RREB1, PCDHA10, EDG2, GLI2, AHI1, PDGFA, ADRA1B, ETS2, CD83, RP1L1, PRSS1, SLC30A2, CORO2A, DGAT2*
TITF1	14	*HOXA9, TSGA10, CRY1, TRA2A, HOXB3, CNNM2, MXI1, UBE2H, MTHFR, ODC1, BCL2, SYTL2, SNX6, HIST1H4C*
GABPB2	12	*HSPH1, BDNF, SYNCRIP, HSPA8, DUSP5, DDIT3, EIF2S1, BMF, PAFAH2, ZBTB10, CXCR3, DNAJB9*
PAX4	25	*HBP1, SYNCRIP, MGC14376, CDC42EP3, DUSP5, NRG2, PPAP2B, SERTAD4, DLX1, BMF, RORA, PJA1, MXI1, IRS1, EIF4E, HIST2H2AC, QPCT, MTHFR, ITGA2, AGR2, KLF3, FAM26B, CFTR, SPHK1, TUBGCP6*
NF1	33	*BDNF, SYNCRIP, MGC14376, SOX4, CDC42EP3, ANP32A, IVNS1ABP, NANOS1, PER3, DDIT3, DLX1, SDPR, PAFAH2, LMO3, RORA, DNAJB4, EVI1, RBP4, UBE2H, IRS1, RIN2, HGF, SYTL2, AGR2, FLRT3, ANKRD12,*

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		PLP1, HCN1, STK33, BNC1, AMOTL2, HOXA3, BMF
NRF1	17	*TSGA10, ANP32A, RASSF1, CRY1, CIRBP, CNTNAP1, DDIT3, EIF2S1, LMO3, PLEKHK1, CXCR4, WDR20, DNAJB9, PCNA, GABPB2, BANP, LRP2BP*
CBFA2T3	2	*MGC14376, CD69*
OLF1	2	*EVI1, DYRK2*
HNF4A	2	*HOXA9, PAFAH2*
FOXJ2	13	*HOXA9, ATF3, IGFBP7, PDE4D, CHD2, LMO3, RORA, MXI1, CCL2, PDE4B, DNAJB9, KLF3, FRAS1*
REPIN1	33	*MGC14376, SOX4, HOXA3, CDC42EP3, ANP32A, PRICKLE1, RASSF1, NRG2, NANOS1, PRKCB1, EIF2S1, RAD51L3, SPRED1, DLX1, BMF, SDPR, CDH13, IL24, CNNM2, PIK3AP1, MXI1, UBE2H, CCNE2, ALDH1A1, BARX2, SYTL2, FLRT3, ANKRD12, PLP1, FRAS1, CPS1, NTS, HMOX1*
E4F1	11	*MGC14376, HOXA9, HOXA3, SPG3A, DUSP5, PRR3, DNAJA4, PLK2, DNAJB4, UBE2H, PPP1R15A*
ETS1	2	*MGC14376, SPRED1*
SF1	2	*GABARAPL1, CHD2*
JUN	32	*EIF4E, ZBTB2, DNAJA4, DDR2, NHS, PAX9, SDCBP, BDNF, MGC14376, SPG3A, CIRBP, GABARAPL1, DDIT3, PDE4D, SPRED1, G0S2, DLX1, EVI1, RBP4, IL24, RIN2, ITGA2, GLI2, AHI1, AGR2, PPP1R15A, PPP1R3C, FBXO30, CSNK1A1, CALB2, HEPH, RAB27B*
MYOD1	20	*BDNF, MGC14376, HOXA3, CDC42EP3, ANP32A, PRICKLE1, PRKCB1, LMO3, CDH13, CCNE2, ALDH1A1, CCL20, ODC1, ITGA2, BARX2, MGC42157, SYTL2, FLRT3, CCL20, RIMS2*
GTF3A	2	*IRS1, FAM26B*
AR	8	*BDNF, SYNCRIP, HOXA3, CDC42EP3, RIMS2, PAX9, RREB1, ABCG2*
POU2F1	22	*BDNF, CDC42EP3, PDE4D, SERTAD4, CHD2, DLX1, LMO3, ZBTB10, EVI1, EIF4E, BCL2, HS3ST1, SLC4A4, HOXA3, PRKCB1, HOXB3, CDH13, CD86, HIST2H2AC, ALDH1A1, RIMS2, FLRT3*
SMAD3	2	*PDE4D, CHD2*
LEF1	49	*HSPH1, BDNF, SYNCRIP, MGC14376, HOXA9, HOXA3, TSGA10, CDC42EP3, ANP32A, IVNS1ABP, MDM1, TRA2A, PLK2, RECK, PDE4D, SERTAD4, CHD2, DLX1, SDPR, LMO3, HOXB3, DNAJB4, PCDHAC2, MXI1, UBE2H, CCNE2, DKK1, HS6ST2, RIN2, ODC1, ITGA2, PLEKHK1, PCDHA10, EDG2, KLF3, FLRT3, ANKRD12, PLP1, PCNA, GABPB2, FRAS1, NTS, UHRF1, BIK, GPR161, TUBB, TCAP, FJX1, FLJ31568*
MYC	25	*HBP1, HSPH1, BDNF, SYNCRIP, SOCS2, HOXA9, HOXA3, HOXA4, DZIP1, BCOR, PRR3, EVC2, KIAA1033, DLX1, NPTX1, ZBTB10, EIF4E, ODC1, PCDHA10, DNAJB9, ANKRD12, HMOX1, PPP1R3C, SOX4, IVNS1ABP*
MYB	12	BDNF, SOCS2, MGC14376, HOXA3, PRICKLE1, MDM1, DDR2, DLX1, HOXB3, CDH13, UBE2H, FRAS1
EGR1	3	SPRED1, PJA1, KLF3
FOXA1	15	EDN2, SOX4, HOXA3, TCF7L2, PDE4D, BMF, HOXB3, MXI1, UBE2H, IRS1, RREB1, KLF3, BANP, MGST1, FABP1

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CDX2	12	SOX4, HOXA9, HOXA3, SERTAD4, DLX1, LMO3, HOXB3, ZBTB10, RIMS2, SYTL2, CPS1, PLSCR4
CDC5L	12	HOXA9, CDC42EP3, BCOR, CHD2, LMO3, RORA, NPTX1, MYH6, MXI1, CCL20, RREB1, PDGFA
ZHX2	12	BDNF, SOX4, HOXA4, CDC42EP3, ATF3, SERTAD4, DLX1, SDPR, CDH13, HGF, SLC4A4, IRF4