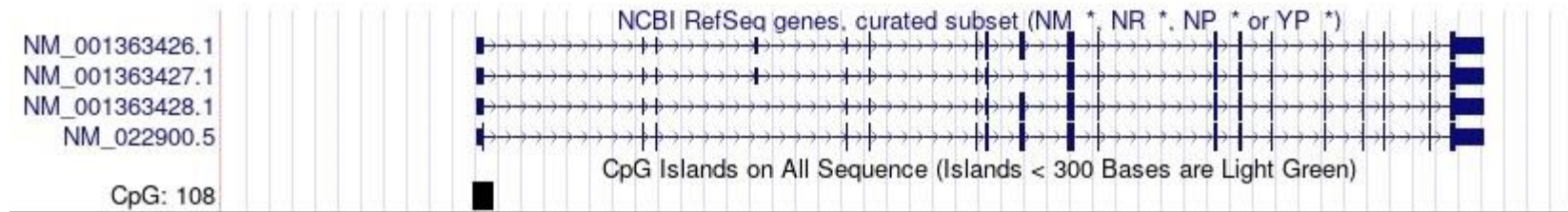
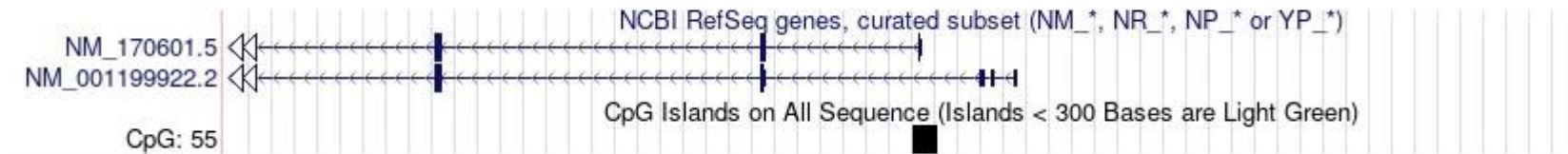


Figure S1. Alignment of CASD1 (A) and SIAE (B) NCBI transcript variants to human genome (GRCh37/hg19)\* and its CpG Islands using USCS genome \*\*

A) chr7:94,139,170-94,186,328



B) chr11:124,511,492-124,552,118



\*Ensembl database : (2 may 2023), [https://www.ensembl.org/Homo\\_sapiens/Regulation/Summary?db=core;fdb=funcgen;g=ENSG00000127995;r=7:94509219-94557019;rf=ENSR00000215297](https://www.ensembl.org/Homo_sapiens/Regulation/Summary?db=core;fdb=funcgen;g=ENSG00000127995;r=7:94509219-94557019;rf=ENSR00000215297)

[https://www.ensembl.org/Homo\\_sapiens/Regulation/Summary?db=core;fdb=funcgen;g=ENSG00000110013;r=11:124633113-124695707;rf=ENSR0000004642](https://www.ensembl.org/Homo_sapiens/Regulation/Summary?db=core;fdb=funcgen;g=ENSG00000110013;r=11:124633113-124695707;rf=ENSR0000004642)

\*\*UCSC Genome: (3 May 2023), [http://genome.ucsc.edu/cgi-](http://genome.ucsc.edu/cgi-bin/hgTracks?db=hg19&lastVirtModeType=default&lastVirtModeExtraState=&virtModeType=default&virtMode=0&nonVirtPosition=&position=chr7%3A94139170%2D94186328&hgsid=1620065055_IR0bazPQThDkcqjiqyjTZvZZi1oC)

[bin/hgTracks?db=hg19&lastVirtModeType=default&lastVirtModeExtraState=&virtModeType=default&virtMode=0&nonVirtPosition=&position=chr7%3A94139170%2D94186328&hgsid=1620065055\\_IR0bazPQThDkcqjiqyjTZvZZi1oC](http://genome.ucsc.edu/cgi-bin/hgTracks?db=hg19&lastVirtModeType=default&lastVirtModeExtraState=&virtModeType=default&virtMode=0&nonVirtPosition=&position=chr7%3A94139170%2D94186328&hgsid=1620065055_IR0bazPQThDkcqjiqyjTZvZZi1oC)

**Table S1. CASD1 promoter (ENSR00000215297) transcription factor binding sites (TFBS).** CASD1 promoter (ENSR00000215297) TFBS deposited in ENCODE database according to ENSEMBL and filtering by Open chromatin & TFBS as Evidence Type.

Transcription Factor	Cell type	Transcription Factor	Cell type
AFF1	K562	MYC	A549, GM12878, H1-hESC_3, HUVEC, HeLa-S3, HepG2, K562, MCF-7
ARID3A	GM12878, HepG2, K562, MCF-7	MYNN	K562
ARNT	GM12878, HepG2, K562	Nanog	H1-hESC_3
ATF1	K562	NEUROD1	K562, MCF-7
ATF2	GM12878, H1-hESC_3, HepG2, K562	NFATC1	GM12878
ATF3	GM12878, H1-hESC_3, HCT116, HepG2, K562	NFATC3	GM12878
ATF4	K562	NFATC3	K562
ATF7	GM12878, HepG2, K562, MCF-7	Nfe2	GM12878, K562
BACH1	GM12878, H1-hESC_3, K562	NFE2L2	A549, HeLa-S3, HepG2
BATF	GM12878	NFIB	MCF-7
BCL11A	GM12878	NFIC	GM12878, HepG2, K562, SK-N.
BCL11A	H1-hESC_3	NFXL1	GM12878, K562, MCF-7
BCL3	A549, GM12878	NfyA	GM12878, HeLa-S3, K562
BCLAF1	GM12878, HepG2, K562	Nfyb	GM12878, HeLa-S3, K562
Bdp1	HeLa-S3, K562	NR0B1	K562
BHLHE40	A549, GM12878, HepG2, K562	NR2C1	GM12878, K562
Brf1	HeLa-S3, K562	NR2C2	GM12878, HeLa-S3, HepG2, K562
Brf2	HeLa-S3, K562	NR2F1	GM12878, K562
CBFA2T2	K562	NR2F2	HepG2, K562
CBFA2T3	K562	NR2F6	HepG2, K562
CBFB	GM12878	NR3C1	A549, K562
CEBPB	A549, GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7	Nrf1	GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.
CLOCK	MCF-7	Pax5	GM12878
CREB1	GM12878, H1-hESC_3, HepG2, K562, MCF-7	PAX8	GM12878, MCF-7
CREB3L1	K562	Pbx3	A549, GM12878, SK-N.
CREBBP	K562	PHB2	HepG2, K562
CREM	GM12878, HepG2, K562	PKNOX1	GM12878, K562, MCF-7
CTBP1	K562, MCF-7	POU2F2	GM12878
CTCF	A549, A673, B, CD14+ monocyte_1, DND-41, GM12878, H1-hESC_3, osteoblast, MM.1S, mammary epithelial_1 NHLF, NPC_2, PC-3, PC-9, SK-N., astrocyte, HCT116, HSMM, HUVEC, myotube, HeLa-S3, HepG2, K562, MCF-7, bipolar neuron, cardiac muscle, dermal fibroblast, hepatocyte, keratinocyte	POU5F1	H1-hESC_3, K562

CTCFL	K562	PRDM1	HeLa-S3
DACH1	K562	Rad21	A549, GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7, SK-N.
DEAF1	K562	RB1	GM12878, K562
DNase1	A673, B, CD14+ monocyte_1, H1-hESC_3, HCT116, HSMM, HUVEC, hepatocyte, keratinocyte, mammary epithelial_1, HeLa-S3, HepG2, K562, MCF-7, MM.1S, NHLF, NPC_2, myotube, osteoblast, dermal fibroblast, PC-3, PC-9, SK-N., astrocyte, bipolar neuron, cardiac muscle	RELB	GM12878
E2F1	HeLa-S3, K562	REST	A549, GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7, SK-N.
E2F4	GM12878, HeLa-S3, K562	RFX5	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.
E2F6	A549, H1-hESC_3, HeLa-S3, K562	RNF2	A549, H1-hESC_3, HepG2, K562
E2F7	K562	RUNX1	K562
E2F8	GM12878, K562, MCF-7	RUNX3	GM12878
E4F1	GM12878, K562, MCF-7	RXRA	GM12878, H1-hESC_3, HepG2, SK-N.
EBF1	GM12878	SETDB1	K562
Egr1	GM12878, H1-hESC_3, HCT116, K562, MCF-7	SIN3A	A549, GM12878, H1-hESC_3, HCT116, HepG2, K562, MCF-7, SK-N.
ELF1	GM12878, HCT116, HepG2, K562, MCF-7, SK-N.	Sirt6	H1-hESC_3, K562
ELF4	K562	SIX4	MCF-7
ELK1	A549, GM12878, HeLa-S3, K562, MCF-7	SIX5	GM12878, H1-hESC_3, K562
ELK4	HeLa-S3	SMAD1	GM12878, K562
EP300	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.	SMAD2	K562
ESRRA	A549, GM12878, K562, MCF-7	SMAD5	GM12878, K562
ETS1	GM12878, HepG2, K562	SMARCA4	HeLa-S3, K562
ETV4	HepG2	SMARCB1	HeLa-S3, K562
ETV6	GM12878, K562	SOX13	HepG2
EZH2	A673, B, DND-41, GM12878, H1-hESC_3, HCT116, HSMM, HUVEC, hepatocyte, keratinocyte, HeLa-S3, HepG2, K562, MM.1S, NPC_2, PC-3, PC-9, astrocyte, mammary epithelial_1	SOX6	HepG2, K562
FOS	GM12878, HUVEC, HeLa-S3, K562, MCF-7	SP1	GM12878, H1-hESC_3, HCT116, HepG2, K562, MCF-7
FOSL1	H1-hESC_3, HCT116, K562	SP2	H1-hESC_3, HepG2, K562
FOSL2	A549, HepG2, MCF-7, SK-N.	SP4	H1-hESC_3
FOXA1	HepG2, K562, MCF-7	SPI1	GM12878, K562

FOXA2	HepG2	SREBF1	A549, GM12878, K562, MCF-7
FOXK2	GM12878, HepG2, K562, MCF-7	SREBF2	A549, GM12878, HeLa-S3
FOXM1	GM12878, K562, MCF-7, SK-N.	Srf	GM12878, H1-hESC_3, HCT116, HepG2, K562, MCF-7
FOXP1	HepG2	STAT1	GM12878
GABPA	GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.	STAT3	GM12878, HeLa-S3
GABPB1	K562	STAT5A	GM12878, K562
Gata1	K562	TAF1	GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.
Gata2	HUVEC, K562	TAF7	H1-hESC_3, K562
GATA3	A549, MCF-7, SK-N.	TAL1	K562
GATA4	HepG2	TARDBP	GM12878, HepG2, K562, MCF-7
GMEB1	K562	TBP	GM12878, H1-hESC_3, HeLa-S3, HepG2, K562
GTF2B	K562	TBX21	GM12878
HCFC1	GM12878, HeLa-S3, HepG2, K562, MCF-7	TBX3	HepG2
HDAC1	K562, A549, GM12878, H1-hESC_3, HepG2, K562, MCF-7	Tcf12	GM12878, H1-hESC_3, HepG2, K562, MCF-7, SK-N.
HDAC3	K562	TCF3	GM12878
HDAC6	GM12878, H1-hESC_3, K562	TCF7	GM12878, HepG2, K562
HES1	K562	TCF7L2	HCT116, HeLa-S3, HepG2, K562, MCF-7
HES1	MCF-7	TEAD4	A549, H1-hESC_3, HCT116, HepG2, K562, MCF-7, SK-N.
HMGN3	K562	THAP1	K562
HNF1A	HepG2	THRA	K562
HNF4A	HepG2	TRIM22	GM12878, HepG2, MCF-7
HNF4G	HepG2	TRIM28	K562
HSF1	GM12878, MCF-7	USF1	GM12878, H1-hESC_3, HCT116, HepG2, K562, SK-N.
IKZF1	GM12878, HepG2, K562	USF2	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, SK-N.
IKZF2	GM12878	XRCC4	K562
IRF2	K562	YBX1	GM12878, HepG2, K562, MCF-7
IRF3	GM12878, HeLa-S3, HepG2, SK-N.	YBX3	K562
IRF4	GM12878	Yy1	GM12878, H1-hESC_3, HCT116, HepG2, K562, SK-N.
IRF5	GM12878	ZBED1	GM12878, K562
JUN	A549, H1-hESC_3, HUVEC, HeLa-S3, HepG2, K562, MCF-7	ZBTB33	GM12878, HCT116, HepG2, K562, MCF-7, SK-N.
Junb	A549, GM12878, K562	ZBTB7A	HepG2, K562

Jund	GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7, SK-N.	ZBTB7B	MCF-7
KDM1A	A549, GM12878, H1-hESC_3, HepG2, K562	ZC3H11A	A549, K562
KDM5A	A549, H1-hESC_3	ZEB1	GM12878, HepG2
KDM5B	K562	ZHX1	HeLa-S3, K562
KLF16	K562	ZHX2	HepG2, MCF-7
KLF5	GM12878	ZKSCAN1	HeLa-S3, HepG2, K562, MCF-7
LEF1	K562	ZNF207	GM12878, HepG2, MCF-7
MAFF	HeLa-S3, HepG2, K562	ZNF217	GM12878, MCF-7
MAFK	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7	ZNF24	GM12878, HepG2, K562, MCF-7
Max	A549, GM12878, H1-hESC_3, HCT116, HUVEC, HeLa-S3, HepG2, K562, MCF-7, SK-N.	Znf263	K562
MEF2A	GM12878, K562, SK-N.	ZNF274	GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562
MEF2B	GM12878	ZNF444	MCF-7
MEF2C	GM12878	ZNF639	K562
MEIS2	K562	ZSCAN29	GM12878, K562
MGA	K562	ZZZ3	GM12878, HeLa-S3, K562
MITF	K562	MGA	K562
MNT	HepG2, K562, MCF-7	MITF	K562
MYBL2	HepG2, K562		

**Table S2. SIAE promoter (ENSR00000046429) transcription factor binding sites (TFBS).** SIAE promoter (ENSR00000046429) TFBS deposited in ENCODE database according to ENSEMBL and filtering by Open chromatin & TFBS as Evidence Type [ref.

Transcription Factor	Cell type	Transcription Factor	Cell type
AFF1	K562	MITF	K562
ARID3A	GM12878, HepG2, K562, MCF-7	MNT	HepG2, K562, MCF-7
ARNT	GM12878, HepG2, K562	MYBL2	HepG2, K562
ATF1	K562	MYC	A549, GM12878, H1-hESC_3, HUVEC, HeLa-S3, HepG2, K562, MCF-7
ATF2	GM12878, H1-hESC_3, HepG2, K562	MYNN	K562
ATF3	GM12878, H1-hESC_3, HCT116, HepG2, K562	Nanog	H1-hESC_3
ATF4	K562	NEUROD1	K562, MCF-7
ATF7	GM12878, HepG2, K562, MCF-7	NFATC1	GM12878
BACH1	GM12878, H1-hESC_3, K562	NFATC3	GM12878, K562
BATF	GM12878	Nfe2	GM12878, K562
BCL11A	GM12878, H1-hESC_3	NFE2L2	A549, HeLa-S3, HepG2
BCL3	A549, GM12878	NFIB	MCF-7
BCLAF1	GM12878, HepG2, K562	NFIC	GM12878, HepG2, K562, SK-N.
Bdp1	HeLa-S3, K562	NFXL1	GM12878, K562, MCF-7

BHLHE40	A549, GM12878, HepG2, K562	Nfya	GM12878, HeLa-S3, K562
Brf1	HeLa-S3, K562	Nfyb	GM12878, HeLa-S3, K562
Brf2	HeLa-S3, K562	NR0B1	K562
CBFA2T2	K562	NR2C1	GM12878, K562
CBFA2T3	K562	NR2C2	GM12878, HeLa-S3, HepG2, K562
CBFB	GM12878	NR2F1	GM12878, K562
CEBPB	A549, GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7	NR2F2	HepG2, K562, MCF-7
CLOCK	MCF-7	NR2F6	HepG2, K562
CREB1	GM12878, H1-hESC_3, HepG2, K562, MCF-7	NR3C1	A549, K562
CREB3L1	K562	Nrf1	GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.
CREBBP	K562	Pax5	GM12878
CREM	GM12878, HepG2, K562	PAX8	GM12878, MCF-7
CTBP1	K562, MCF-7	Pbx3	A549, GM12878, SK-N.
CTCF	A549, A673, B, CD14+ monocyte_1, DND-41, GM12878, H1-hESC_3, HCT116, HSMM, HUVEC, HeLa-S3, HepG2, K562, MCF-7, MM.1S, NHLF, NPC_2, PC-3, PC-9, SK-N., astrocyte, bipolar neuron, cardiac muscle, dermal fibroblast, hepatocyte, keratinocyte, mammary epithelial_1, myotube, osteoblast	PHB2	HepG2, K562
CTCF1	K562	PKNOX1	GM12878, K562, MCF-7
DACH1	K562	POU2F2	GM12878
DEAF1	K562	POU5F1	H1-hESC_3, K562
DNase1	A673, B, CD14+ monocyte_1, H1-hESC_3, HCT116, HSMM, HUVEC, HeLa-S3, HepG2, K562, MCF-7, MM.1S, NHLF, NPC_2, PC-3, PC-9, SK-N., astrocyte, bipolar neuron, cardiac muscle, dermal fibroblast, hepatocyte, keratinocyte, mammary epithelial_1, myotube, osteoblast	PRDM1	HeLa-S3
E2F1	HeLa-S3, K562	Rad21	A549, GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7, SK-N.
E2F4	GM12878, HeLa-S3, K562	RB1	GM12878, K562
E2F6	A549, H1-hESC_3, HeLa-S3, K562	RELB	GM12878
E2F7	K562	REST	A549, GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7, SK-N.
E2F8	GM12878, K562, MCF-7	RFX5	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.

E4F1	GM12878, K562, MCF-7, GM12878	RNF2	A549, H1-hESC_3, HepG2, K562
Egr1	GM12878, H1-hESC_3, HCT116, K562, MCF-7	RUNX1	K562
ELF1	GM12878, HCT116, HepG2, K562, MCF-7, SK-N.	RUNX3	GM12878
ELF4	K562	RXRA	GM12878, H1-hESC_3, HepG2, SK-N.
ELK1	A549, GM12878, HeLa-S3, K562, MCF-7	SETDB1	K562
ELK4	HeLa-S3	SIN3A	A549, GM12878, H1-hESC_3, HCT116, HepG2, K562, MCF-7, SK-N.
EP300	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.	Sirt6	H1-hESC_3, K562,
ESRRA	A549, GM12878, K562, MCF-7	SIX4	MCF-7
ETS1	GM12878, HepG2, K562	SIX5	GM12878, H1-hESC_3, K562
ETV4	HepG2	SMAD1	GM12878, K562
ETV6	GM12878, K562	SMAD2	K562
EZH2	A673, B, DND-41, GM12878, H1-hESC_3, HCT116, HSMM, HUVEC, HeLa-S3, HepG2, K562, MM.1S, NPC_2, PC-3, PC-9, astrocyte, hepatocyte, keratinocyte, mammary epithelial_1,	SMAD5	GM12878, K562
FOS	GM12878, HUVEC, HeLa-S3, K562, MCF-7	SMARCA4	HeLa-S3, K562
FOSL1	H1-hESC_3, HCT116, K562	SMARCB1	HeLa-S3, K562
FOSL2	A549, HepG2, MCF-7, SK-N.	SOX13	HepG2
FOXA1	HepG2, K562, MCF-7	SOX6	HepG2, K562
FOXA2	HepG2	SP1	GM12878, H1-hESC_3, HCT116, HepG2, K562, MCF-7
FO XK2	GM12878, HepG2, K562, MCF-7	SP2	H1-hESC_3, HepG2, K562
FOX M1	GM12878, K562, MCF-7, SK-N.	SP4	H1-hESC_3
FOXP1	HepG2	SPI1	GM12878, K562
GABPA	GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.	SREBF1	A549, GM12878, K562, MCF-7
GABPB1	K562	SREBF2	A549, GM12878, HeLa-S3
Gata1	K562	Srf	GM12878, H1-hESC_3, HCT116, HepG2, K562, MCF-7
Gata2	HUVEC, K562	STAT1	GM12878
GATA3	A549, MCF-7, SK-N.	STAT3	GM12878, HeLa-S3
GATA4	HepG2	STAT5A	GM12878, K562
GMEB1	K562	TAF1	GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, MCF-7, SK-N.
GTF2B	K562	TAF7	H1-hESC_3, K562
HCFC1	GM12878, HeLa-S3, HepG2, K562, MCF-7	TAL1	K562

HDAC1	K562	TARDBP	GM12878, HepG2, K562, MCF-7
HDAC2	A549, GM12878, H1-hESC_3, HepG2, K562, MCF-7	TBP	GM12878, H1-hESC_3, HeLa-S3, HepG2
HDAC3	K562	TBX21	GM12878
HDAC6	GM12878, H1-hESC_3, K562	TBX3	HepG2
HES1	K562, MCF-7	Tcf12	GM12878, H1-hESC_3, HepG2, K562, MCF-7, SK-N.
HMGN3	K562	TCF3	GM12878
HNF1A	HepG2	TCF7	GM12878, HepG2, K562
HNF4A	HepG2	TCF7L2	HCT116, HeLa-S3, HepG2, K562, MCF-7
HNF4G	HepG2	TEAD4	A549, H1-hESC_3, HCT116, HepG2, K562, MCF-7, SK-N.
HSF1	GM12878, MCF-7	THAP1	K562
IKZF1	GM12878, HepG2, K562	THRA	K562
IKZF2	GM12878	TRIM22	GM12878, HepG2, MCF-7
IRF2	K562	TRIM28	K562
IRF3	GM12878, HeLa-S3, HepG2, SK-N.	USF1	GM12878, H1-hESC_3, HCT116, HepG2, K562, SK-N.
IRF4	GM12878	USF2	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562, SK-N.
IRF5	GM12878	XRCC4	K562
JUN	A549, H1-hESC_3, HUVEC, HeLa-S3, HepG2, K562, MCF-7	YBX1	GM12878, HepG2, K562, MCF-7
Junb	A549, GM12878, K562	YBX3	K562
Jund	GM12878, H1-hESC_3, HCT116, HeLa-S3, HepG2, K562, MCF-7, SK-N.	Yy1	GM12878, H1-hESC_3, HCT116, HepG2, K562, SK-N.
KDM1A	A549, GM12878, H1-hESC_3, HepG2, K562	ZBED1	GM12878
KDM5A	A549, H1-hESC_3	ZBED1	K562
KDM5B	K562	ZBTB33	GM12878, HCT116, HepG2, K562, MCF-7, SK-N.
KLF16	K562	ZBTB7A	HepG2, K562
KLF5	GM12878	ZBTB7B	MCF-7
LEF1	K562	ZC3H11A	A549, K562
MAFF	HeLa-S3, HepG2, K562	ZEB1	GM12878, HepG2
MAFK	A549, GM12878, H1-hESC_3, HeLa-S3, HepG2, K562	ZHX1	HeLa-S3, K562
Max	A549, GM12878, H1-hESC_3, HCT116, HUVEC, HeLa-S3, HepG2, K562, MCF-7, SK-N.	ZHX2	HepG2, MCF-7
MEF2A	GM12878, K562, SK-N.	ZKSCAN1	HeLa-S3, HepG2, K562, MCF-7
MEF2B	GM12878	ZNF207	GM12878, HepG2, MCF-7
MEF2C	GM12878	ZNF217	GM12878, MCF-7
MEIS2	K562	ZNF24	GM12878, HepG2, K562, MCF-7
MGA	K562	Znf263	K562