

Motifs Enriched in Demethylated DMRs

Motif Name	Consensus	P-value	FDR
Jun-AP1(bZIP)/K562-cJun	GATGASTCATCN	1E-251	0
AP-1(bZIP)/ThioMac-PU.1	VTGACTCATC	1E-249	0
c-Myc(HLH)/LNCAP-cMyc	VCCACGTG	1E-68	0
NF-E2(bZIP)/K562-NFE2	GATGACTCAGCA	1E-28	0
bHLHE40(HLH)/HepG2-BHLHE40	SGKCACGTGM	1E-23	0
USF1(HLH)/GM12878-Usf1	SGTCACGTGR	1E-15	0
EGR(Zf)/K562-EGR1	TCCGCCACGCA	1E-13	0
JunD(bZIP)/K562-JunD	ATGACGTCATCN	1E-12	0
NFAT:AP1/Jurkat-NFATC1	SARTGGAAAARTGAGTCAB	1E-12	0
NFAT(RHD)/Jurkat-NFATC1	ATTTTCCATT	1E-10	0
c-Jun-CRE(bZIP)/K562-cJun	ATGACGTCATCY	1E-10	0
Max(HLH)/K562-Max	RCCACGTGGYYN	1E-08	0
Pdx1(Homeobox)/Isllet-Pdx1	YCATYAATCA	1E-08	0
NFkB-p65-Rel(RHD)/LPS-exp	GGAAATTC	1E-07	0
Hoxb4/ES-Hoxb4(GSE34014)	TGATTRATGGCY	1E-07	0
AARE(HLH)/mES-cMyc	GATTGCATCA	1E-07	0
Nanog(Homeobox)/mES-Nanog	RGCCATTAAC	1E-06	0
IRF4(IRF)/GM12878-IRF4	ACTGAAACCA	1E-06	0
NRF1/Promoter	STGCGCATGCGC	1E-06	0
Egr2/Thymocytes-Egr2(GSE34254)	NGCGTGGGCGGR	1E-06	0
Sp1(Zf)/Promoter	GGCCCCGCCCCC	1E-05	0
c-Myc/mES-cMyc	VVCCACGTGG	1E-05	0
ATF3(bZIP)/K562-ATF3	SGGTCACGTGAC	1E-05	0.0001
HIF-1a(HLH)/MCF7-HIF1a	TACGTGCV	1E-04	0.0002
T1ISRE(IRF)/Ifnb-Exp	ACTTTCGTTTCT	1E-03	0.0017
Nur77(NR)/K562-NR4A1(GSE31363)	TGACCTTTNCNT	1E-03	0.003
MYB(HTH)/ERMYB-Myb(GSE22095)	GGCVGTTR	1E-03	0.0035
CEBP:AP1/ThioMac-CEBPb	DRTGTTGCAA	1E-02	0.01
HOXA2(Homeobox)/mES-Hoxa2	GYCATCMATCAT	1E-02	0.0104
CRE(bZIP)/Promoter	CSGTGACGTCAC	1E-02	0.0184
X-box(HTH)/NPC-H3K4me1	GGTTGCCATGGCAA	1E-02	0.0202
GATA-IR3(Zf)/iTreg-Gata3(GSE20898)	NNNNNBAGATAWYATCTVHN	1E-02	0.0244
ISRE(IRF)/ThioMac-LPS-exp	AGTTTCASSTTC	1E-02	0.025
GRE/RAW264.7-GRE	VAGRACAKWCTGTYC	1E-02	0.0463
RXR(NR/DR1)/3T3L1-RXR	TAGGGCAAAGGTCA	1E-02	0.0465

Motifs Enriched in Methylated DMRs

Motif Name	Consensus	P-value	FDR
ZFX(Zf)/mES-Zfx	AGGCCTRG	1E-283	0
ZNF711(Zf)/SH-SY5Y-ZNF711	AGGCCTAG	1E-209	0
EBF1(EBF)/Near-E2A	GTCCCCWGGGGA	1E-137	0
SPDEF(ETS)/VCaP-SPDEF	ASWTCCTGBT	1E-135	0
Nkx2.5(Homeobox)/HL1-Nkx2.5.biotin	RRSCACTYAA	1E-118	0
Bcl6(Zf)/Liver-Bcl6(GSE31578)	NNNCTTTCCAGGAAA	1E-114	0
ETV1(ETS)/GIST48-ETV1	AACCGGAAGT	1E-106	0
AP-2alpha(AP2)/Hela-AP2alpha	ATGCCCTGAGGC	1E-97	0
TATA-Box(TBP)/Promoter	CCTTTTAWAGSC	1E-94	0
Erra(NR)/HepG2-Erra	CAAAGGTCAG	1E-90	0
EWS:FLI1-fusion(ETS)/SK_N_MC-EWS:FLI1	VACAGGAAAT	1E-87	0
GABPA(ETS)/Jurkat-GABPa	RACCGGAAGT	1E-83	0
ZNF143 STAF(Zf)/CUTLL-ZNF143(GSE29600)	ATTTCCCAGVAKSCY	1E-82	0
ELF1(ETS)/Jurkat-ELF1	AVCCGGAAGT	1E-78	0
AP2gamma(AP2)/MCF7-TFAP2c	HHTGSCCTSAGGSCA	1E-78	0
E2A-nearPU.1(HLH)/Bcell-PU.1	NVCACCTGBN	1E-77	0
ERG(ETS)/VCaP-ERG	ACAGGAAGTG	1E-71	0
FOXA1:AR/LNCAP-AR	AGTAAACAAAAAGAACAND	1E-70	0
PRDM14(Zf)/H1-PRDM14	RGGTCTCTAACY	1E-64	0
HRE(HSF)/HepG2-HSF1	BSTTCTRGAABVTTCYAGAA	1E-62	0
FOXA1(Forkhead)/MCF7-FOXA1	WAAGTAAACA	1E-62	0
NF1(CTF)/LNCAP-NF1	CYTGGCABNSTGCCAR	1E-61	0
E2A(HLH)/proBcell-E2A	DNRCAGCTGY	1E-61	0
Tcf4(HMG)/Hct116-Tcf4	ASATCAAAGGVA	1E-60	0
EWS:ERG-fusion(ETS)/CADO_ES1-EWS:ERG	ATTTCCCTGTN	1E-54	0

Nr5a2(NR)/mES-Nr5a2	BTCAAGGTCA	1E-54	0
Tcf3(HMG)/mES-Tcf3	ASWTCAAAGG	1E-53	0
Unknown/Homeobox/Limb-p300	SSCMATWAAA	1E-52	0
BORIS(Zf)/K562-CTCF	CNNBRGCGCCCCCTGSTGCC	1E-52	0
FOXA1(Forkhead)/LNCAP-FOXA1	WAAGTAAACA	1E-51	0
HNF4a(NR/DR1)/HepG2-HNF4a	CARRGKBCAAAGTYCA	1E-48	0
ETS(ETS)/Promoter	AACCGGAAGT	1E-47	0
Smad3(MAD)/NPC-Smad3(GSE36673)	TWGTCTGV	1E-46	0
ETS1(ETS)/Jurkat-ETS1	ACAGGAAGTG	1E-45	0
Ets1-distal(ETS)/CD4+-PolII	MACAGGAAGT	1E-44	0
AR-halfsite(NR)/LNCaP-AR	CCAGGAACAG	1E-41	0
Nr5a2(NR)/Pancreas-LRH1(GSE34295)	BTCAAGGTCA	1E-37	0
CRX(Homeobox)/Retina-Crx	GCTAATCC	1E-36	0
Tcf12(HLH)/GM12878-Tcf12	VCAGCTGYTG	1E-33	0
SEP3(MADS)/Arabidopsis-Flower-Sep3	CCAAAAAGGG	1E-33	0
RARg(NR)/ES-RARg(GSE30538)	AGGTCAAGGTCA	1E-30	0
EBF(EBF)/proBcell-EBF	DGTCCCYRGGGA	1E-29	0
CTCF(Zf)/CD4+-CTCF	AYAGTGCCMYCTRGTGGCCA	1E-29	0
CHR/Cell-Cycle-Exp	SRGTTTCAA	1E-27	0
Stat3+il23(Stat)/CD4-Stat3	SVYTTCCNGGAARB	1E-26	0
Gfi1b(Zf)/HPC7-Gfi1b	MAATCACTGC	1E-24	0
PU.1(ETS)/ThioMac-PU.1	AGAGGAAGTG	1E-24	0
HEB?/mES-Nanog	CACAGCAGGGGG	1E-24	0
Atoh1(bHLH)/Cerebellum-Atoh1	VNRVCAGCTGGY	1E-21	0
Stat3(Stat)/mES-Stat3	CTTCCGGGAA	1E-20	0
Sox3(HMG)/NPC-Sox3(GSE33059)	CCWTTGT	1E-19	0
STAT6(Stat)/CD4-Stat6	ABTTCYRRGAA	1E-18	0
NeuroD1(bHLH)/Isl1-NeuroD1(GSE30298)	GCCATCTGTT	1E-17	0
GFY-Staf/Promoters	RACTACAATCCAGAAKGC	1E-17	0
Mef2a(MADS)/HL1-Mef2a.biotin/	CYAAAAATAG	1E-16	0
NFkB-p65(RHD)/GM12787-p65	WGGGGATTTCCC	1E-16	0
STAT1(Stat)/HelaS3-STAT1	NATTCCNGGAAAT	1E-16	0
TCFL2(HMG)/K562-TCFL2(GSE29196)	ACWTCAAAGG	1E-16	0
Olig2(bHLH)/Neuron-Olig2(GSE30882)	RCCATMTGTT	1E-15	0
MyoD(HLH)/Myotube-MyoD	RRCAGCTGYTSY	1E-15	0
Sox2(HMG)/mES-Sox2	BCCATTGTTT	1E-14	0
ETS:RUNX/Jurkat-RUNX1	RCAGGATGTGGT	1E-13	0
FOXP1(Forkhead)/H9-FOXP1(GSE31006)	NYYTGTTTTACHN	1E-13	0
STAT4(Stat)/CD4-Stat4	NYTTCCWGGGAAR	1E-13	0
Foxo1(Forkhead)/RAW-Foxo1	CTGTTTAC	1E-13	0
Tlx?/NPC-H3K4me1	CTGGCAGSCTGCCA	1E-12	0
STAT6/Macrophage-Stat6	TTCKKNAGAA	1E-12	0
Hoxc9/Ainv15-Hoxc9	GGCCATAAATCA	1E-11	0
NF1-halfsite(CTF)/LNCaP-NF1	YTGCCAAG	1E-10	0
STAT5(Stat)/mCD4+-Stat5a b	RTTTCTNAGAAA	1E-09	0
ETS:E-box/HPC7-Scl	AGGAARCAGCTG	1E-09	0
TEAD4(TEA)/Tropoblast-Tea4(GSE37350)	CCWGGAAATGY	1E-08	0
VDR(NR/DR3)/GM10855-VDR+vitD	ARAGGTCANWGAGTTCANNN	1E-08	0
GATA3(Zf)/iTreg-Gata3(GSE20898)	AGATAASR	1E-08	0
NRF1(NRF)/MCF7-NRF1	CTGCGCATGCGC	1E-08	0
TR4(NR/DR1)/Hela-TR4	GAGGTCAAAGGTCA	1E-08	0
GATA-DR8(Zf)/iTreg-Gata3(GSE20898)	AGATSTNDNDSAGATAASN	1E-07	0
HOXA9/HSC-Hoxa9(GSE33509)	GGCCATAAATCA	1E-07	0
Esrrb(NR)/mES-Esrrb	KTGACCTTGA	1E-07	0
TEAD(TEA)/Fibroblast-PU.1	YCWGGAAATGY	1E-07	0
Cdx2(Homeobox)/mES-Cdx2	GYMATAAAAH	1E-07	0
RUNX1(Runt)/Jurkat-RUNX1	AAACCACARM	1E-07	0
Oct4(POU/Homeobox)/mES-Oct4	ATTTGCATAW	1E-07	0
EKLF(Zf)/Erythrocyte-Klf1(GSE20478)	NWGGGTGTGGCY	1E-06	0
NF1:FOXA1/LNCAP-FOXA1	WNTGTTTTTRYTTGGCA	1E-06	0
Lhx3(Homeobox)/Forebrain-p300	CTAATTAGCH	1E-05	0

Sox6(HMG)/Myotubes-Sox6(GSE32627)	CCATTGTTNY	1E-05	0
FXR(NR/IR1)/Liver-FXR	AGGTCANTGACCTB	1E-05	0
ARE(NR)/LNCAP-AR	RGRACASNSTGTICYB	1E-05	0
OCT4-SOX2-TCF-NANOG((POU/Homeobox/HMG)/mES	ATTTGCATAACAATG	1E-05	0
Gata2(Zf)/K562-GATA2	BBCTTATCTS	1E-05	0
Foxa2(Forkhead)/Liver-Foxa2	CYTGTTTACWYW	1E-04	0
Tbx5(T-box)/HL1-Tbx5.biotin	AGGTGTCA	1E-04	0
E2F(E2F)/Cell-Cycle-Exp	TTSGCGCGAAAA	1E-04	0
Klf4(Zf)/mES-Klf4	GCCACACCCA	1E-04	0
Tcfcp2l1(CP2)/mES-Tcfcp2l1	NRAACCRGTTYRAACCRGYT	1E-04	0.0001
ZBTB33/GM12878-ZBTB33	GGVTCTCGCGAGAAC	1E-04	0.0001
E2F/Hela-E2F1/Hoemr	CWGGCGGGAA	1E-03	0.0003
GLI3(Zf)/GLI3-ChIP-Chip	CGTGGGTGGTCC	1E-03	0.0005
GATA-DR4(Zf)/iTreg-Gata3(GSE20898)	AGATGKDGAGATAAG	1E-03	0.0013
Gata1(Zf)/K562-GATA1	SAGATAAGR	1E-02	0.0019
BMXB(HTH)/Hela-BMYB(GSE27030)	NHAACBGYYV	1E-02	0.002
Oct2(POU/Homeobox)/Bcell-Oct2	ATATGCAAAT	1E-02	0.0021
REST-NRSF(Zf)/Jurkat-NRSF	GGMGCTGTCCATGGTGCTGA	1E-02	0.0028
HNF6(Homeobox)/Liver-Hnf6(ERP000394)	NTATYGATCH	1E-02	0.003
GATA:SCL/Ter119-SCL	CRGCTGBNGNSNNSAGATAA	1E-02	0.0078
Hnf1(Homeobox)/Liver-Foxa2	GGTTAAWCATTAA	1E-02	0.0084
Tbx20(T-box)/Heart-Tbx20(GSE29636)	GGTGYTGACAGS	1E-02	0.0086
SCL/HPC7-Scl	AVCAGCTG	1E-02	0.0107
RUNX2(Runt)/PCa-RUNX2(GSE33889)	NWAACCACADNN	1E-02	0.012
PAX3:FKHR-fusion(Paired/Homeobox)/Rh4-PAX3:FKHR	ACCRTGACTAATTNN	1E-02	0.0134
PU.1-IRF/Bcell-PU.1	MGGAAGTGAAAC	1E-01	0.018
RFX(HTH)/K562-RFX3	CGGTTGCCATGGCAAC	1E-01	0.0272
RUNX(Runt)/HPC7-Runx1	SAAACCACAG	1E-01	0.031
RUNX-AML(Runt)/CD4+-PoliI	GCTGTGGTTW	1E-01	0.031
GFX(?)/Promoter	ATTCTCGCGAGA	1E-01	0.0311
Pax7-long(Paired/Homeobox)/Myoblast-Pax7(GSE25064)	TAATCHGATTAC	1E-01	0.0339
Znf263(Zf)/K562-Znf263	CVGTSCTCCC	1E-01	0.0349
GFY(?)/Promoter	ACTACAATTCCC	1E-01	0.0382
CARG(MADS)/PUER-Srf	CCATATATGGNM	1E-01	0.0382
Reverb(NR/DR2)/BLRP(RAW)-Reverba	GTRGGTCASTGGGTCA	1E-01	0.0418