

A DNABERT based Deep Learning Framework for Predicting Transcription Factor Binding Sites

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Table S1: Details of 165 ChIP-seq datasets

TFs	Datasets	Train	Test
CEBPB	wgEncodeAwgTfbsHaibHepg2Cebpbsc150V0416101UniPk	28491	7123
	wgEncodeAwgTfbsHaibK562Cebpbsc150V0422111UniPk	34747	8687
	wgEncodeAwgTfbsSydhA549CebpbIggrabUniPk	60745	15187
	wgEncodeAwgTfbsSydhH1hesCebpbIggrabUniPk	24472	6118
	wgEncodeAwgTfbsSydhHelas3CebpbIggrabUniPk	94892	23724
	wgEncodeAwgTfbsSydhHepg2CebpbForsklnUniPk	29012	7254
	wgEncodeAwgTfbsSydhHepg2CebpbIggrabUniPk	89115	22279
	wgEncodeAwgTfbsSydhImr90CebpbIggrabUniPk	109712	27428
	wgEncodeAwgTfbsSydhK562CebpbIggrabUniPk	60416	15104
CoREST	wgEncodeAwgTfbsSydhHepg2Corestsc30189IggrabUniPk	8515	2129
	wgEncodeAwgTfbsSydhK562Corestsc30189IggrabUniPk	56211	14053
CTCF	wgEncodeAwgTfbsBroadDnd41CtcfUniPk	77531	19383
	wgEncodeAwgTfbsBroadGm12878CtcfUniPk	69435	17359
	wgEncodeAwgTfbsBroadH1hesCtcfUniPk	103174	25794
	wgEncodeAwgTfbsBroadHelas3CtcfUniPk	81049	20263
	wgEncodeAwgTfbsBroadHepg2CtcfUniPk	72324	18082
	wgEncodeAwgTfbsBroadHmecCtcfUniPk	61801	15451
	wgEncodeAwgTfbsBroadHsmmCtcfUniPk	79036	19760
	wgEncodeAwgTfbsBroadHsmmtCtcfUniPk	74404	18602
	wgEncodeAwgTfbsBroadHuvecCtcfUniPk	58102	14526
	wgEncodeAwgTfbsBroadK562CtcfUniPk	80417	20105
	wgEncodeAwgTfbsBroadNhaCtcfUniPk	59652	14914
	wgEncodeAwgTfbsBroadNhdfadCtcfUniPk	75851	18963
	wgEncodeAwgTfbsBroadNhekCtcfUniPk	72955	18239
	wgEncodeAwgTfbsBroadNhlfCtcfUniPk	61337	15335
	wgEncodeAwgTfbsBroadOsteoblCtcfUniPk	86148	21538
	wgEncodeAwgTfbsUtaGm12878CtcfUniPk	75536	18884
	wgEncodeAwgTfbsUtaH1hesCtcfUniPk	67601	16901
	wgEncodeAwgTfbsUtaHelas3CtcfUniPk	90883	22721
	wgEncodeAwgTfbsUtaK562CtcfUniPk	86808	21702
	wgEncodeAwgTfbsUtaMcf7CtcfUniPk	90049	22513
HaE2F1	wgEncodeAwgTfbsSydhHelas3Hae2f1UniPk	15990	3998
	wgEncodeAwgTfbsSydhMcf7Hae2f1UcdUniPk	30704	7676
EZH2	wgEncodeAwgTfbsBroadDnd41Ezh239875UniPk	2681	671
	wgEncodeAwgTfbsBroadHelas3Ezh239875UniPk	2840	710
	wgEncodeAwgTfbsBroadHepg2Ezh239875UniPk	5235	1309
	wgEncodeAwgTfbsBroadHsmmEzh239875UniPk	2464	616
	wgEncodeAwgTfbsBroadHuvecEzh239875UniPk	6788	1698
	wgEncodeAwgTfbsBroadK562Ezh239875UniPk	2684	672
	wgEncodeAwgTfbsHaibA549Fosl2V0422111Etoh02UniPk	44750	11188
	wgEncodeAwgTfbsHaibH1hesFosl1sc183V0416102UniPk	1758	440
	wgEncodeAwgTfbsHaibHepg2Fosl2V0416101UniPk	39678	9920

	wgEncodeAwgTfbsHaibK562Fosl1sc183V0416101UniPk	17569	4393
	wgEncodeAwgTfbsSydhGm12878CfosUniPk	3488	872
	wgEncodeAwgTfbsSydhHelas3CfosUniPk	14494	3624
	wgEncodeAwgTfbsSydhHuvecCfosUcdUniPk	72961	18241
	wgEncodeAwgTfbsSydhK562CfosUniPk	11968	2992
	wgEncodeAwgTfbsSydhMcf10aesCfosTam112hHvdUniPk	143425	35857
	wgEncodeAwgTfbsSydhMcf10aesCfosTam14hHvdUniPk	134080	33520
	wgEncodeAwgTfbsSydhMcf10aesCfosTamHvdUniPk	109454	27364
	wgEncodeAwgTfbsUchicagoK562EfosUniPk	16120	4030
FOXA1	wgEncodeAwgTfbsHaibA549Foxa1V0416102Dex100nmUniPk	12054	3014
	wgEncodeAwgTfbsHaibEcc1Foxa1sc6553V0416102Dm002p1hUniPk	9283	2321
	wgEncodeAwgTfbsHaibHepg2Foxa1sc101058V0416101UniPk	67550	16888
	wgEncodeAwgTfbsHaibHepg2Foxa1sc6553V0416101UniPk	80224	20056
	wgEncodeAwgTfbsHaibT47dFoxa1sc6553V0416102Dm002p1hUniPk	65257	16315
GABP	wgEncodeAwgTfbsHaibA549GabpV0422111Etoh02UniPk	18315	4579
	wgEncodeAwgTfbsHaibGm12878GabpPcr2xUniPk	10211	2553
	wgEncodeAwgTfbsHaibH1hescGabpPcr1xUniPk	8968	2242
	wgEncodeAwgTfbsHaibHelas3GabpPcr1xUniPk	10494	2624
	wgEncodeAwgTfbsHaibHepg2GabpPcr2xUniPk	15710	3928
	wgEncodeAwgTfbsHaibK562GabpV0416101UniPk	22387	5597
GATA2	wgEncodeAwgTfbsHaibK562Gata2sc267Pcr1xUniPk	30081	7521
	wgEncodeAwgTfbsSydhHuvecGata2UcdUniPk	42681	10671
	wgEncodeAwgTfbsSydhK562Gata2UcdUniPk	16649	4163
	wgEncodeAwgTfbsSydhShsy5yGata2UcdUniPk	55936	13984
	wgEncodeAwgTfbsUchicagoK562Egata2UniPk	18004	4502
GATA3	wgEncodeAwgTfbsHaibT47dGata3sc268V0416102Dm002p1hUniPk	58292	14574
	wgEncodeAwgTfbsSydhMcf7Gata3UcdUniPk	9585	2397
	wgEncodeAwgTfbsSydhShsy5yGata3sc269sc269UcdUniPk	24948	6238
JUN	wgEncodeAwgTfbsSydhHelas3CjunIggrabUniPk	34089	8523
	wgEncodeAwgTfbsSydhHepg2CjunIggrabUniPk	20036	5010
	wgEncodeAwgTfbsSydhHuvecCjunUniPk	46128	11532
	wgEncodeAwgTfbsSydhK562CjunUniPk	15460	3866
JUND	wgEncodeAwgTfbsHaibHepg2JundPcr1xUniPk	34142	8536
	wgEncodeAwgTfbsSydhGm12878JundUniPk	3892	974
	wgEncodeAwgTfbsSydhH1hescJundIggrabUniPk	15019	3755
	wgEncodeAwgTfbsSydhHelas3JundIggrabUniPk	49201	12301
	wgEncodeAwgTfbsSydhHepg2JundIggrabUniPk	50878	12720
	wgEncodeAwgTfbsSydhK562JundIggrabUniPk	62753	15689
	wgEncodeAwgTfbsUchicagoK562EjundUniPk	41771	10443
MAX	wgEncodeAwgTfbsHaibK562MaxV0416102UniPk	70233	17559
	wgEncodeAwgTfbsSydhGm12878MaxIggmusUniPk	19747	4937
	wgEncodeAwgTfbsSydhH1hescMaxUcdUniPk	17553	4389
	wgEncodeAwgTfbsSydhHelas3MaxIggrabUniPk	46209	11553
	wgEncodeAwgTfbsSydhHepg2MaxIggrabUniPk	18774	4694
	wgEncodeAwgTfbsSydhHuvecMaxUniPk	14409	3603

	wgEncodeAwgTfbsSydhK562MaxIggrabUniPk	49299	12325
	wgEncodeAwgTfbsSydhNb4MaxUniPk	54438	13610
MYC	wgEncodeAwgTfbsSydhNb4CmycUniPk	41251	10313
	wgEncodeAwgTfbsUtaGm12878CmycUniPk	5830	1458
	wgEncodeAwgTfbsUtaH1hescCmycUniPk	1939	485
	wgEncodeAwgTfbsUtaHepg2CmycUniPk	7012	1754
Pol2b	wgEncodeAwgTfbsBroadHelas3Pol2bUniPk	4779	1195
	wgEncodeAwgTfbsBroadHuvecPol2bUniPk	8334	2084
	wgEncodeAwgTfbsBroadNhekPol2bUniPk	9046	2262
Sin3A	wgEncodeAwgTfbsHaibA549Sin3ak20V0422111Etoh02UniPk	9516	2380
	wgEncodeAwgTfbsHaibHepg2Sin3ak20Pcr1xUniPk	26051	6513
	wgEncodeAwgTfbsHaibK562Sin3ak20V0416101UniPk	19993	4999
	wgEncodeAwgTfbsHaibPanc1Sin3ak20V0416101UniPk	11289	2823
	wgEncodeAwgTfbsSydhH1hescSin3anb6001263IggrabUniPk	33697	8425
SP1	wgEncodeAwgTfbsHaibH1hescSp1Pcr1xUniPk	23648	5912
	wgEncodeAwgTfbsHaibHepg2Sp1Pcr1xUniPk	39952	9988
SP2	wgEncodeAwgTfbsHaibH1hescSp2V0422111UniPk	3830	958
	wgEncodeAwgTfbsHaibHepg2Sp2V0422111UniPk	4152	1038
SRF	wgEncodeAwgTfbsHaibH1hescSrfPcr1xUniPk	8009	2003
	wgEncodeAwgTfbsHaibHepg2SrfV0416101UniPk	8372	2094
	wgEncodeAwgTfbsHaibK562SrfV0416101UniPk	7414	1854
STAT3	wgEncodeAwgTfbsSydhGm12878Stat3IggmusUniPk	10185	2547
	wgEncodeAwgTfbsSydhHelas3Stat3IggrabUniPk	21563	5391
	wgEncodeAwgTfbsSydhMcf10aesStat3Etoh01bUniPk	70411	17603
	wgEncodeAwgTfbsSydhMcf10aesStat3Etoh01cUniPk	64587	16147
	wgEncodeAwgTfbsSydhMcf10aesStat3Etoh01UniPk	19377	4845
	wgEncodeAwgTfbsSydhMcf10aesStat3Tam112hHvdUniPk	62265	15567
	wgEncodeAwgTfbsSydhMcf10aesStat3TamUniPk	69246	17312
TAF1	wgEncodeAwgTfbsHaibA549Taf1V0422111Etoh02UniPk	15691	3923
	wgEncodeAwgTfbsHaibGm12878Taf1Pcr1xUniPk	22305	5577
	wgEncodeAwgTfbsHaibGm12892Taf1V0416102UniPk	14776	3694
	wgEncodeAwgTfbsHaibHepg2Taf1Pcr2xUniPk	25369	6343
	wgEncodeAwgTfbsHaibK562Taf1V0416101UniPk	23428	5858
	wgEncodeAwgTfbsHaibSknshTaf1V0416101UniPk	21908	5478
TBPI	wgEncodeAwgTfbsSydhGm12878TbpIggmusUniPk	23278	5820
	wgEncodeAwgTfbsSydhHepg2TbpIggrabUniPk	21732	5434
	wgEncodeAwgTfbsSydhK562TbpIggmusUniPk	27345	6837
	wgEncodeAwgTfbsSydhH1hescCtbp2UcdUniPk	11228	2808
TEAD4	wgEncodeAwgTfbsHaibH1hescTead4sc101184V0422111UniPk	31233	7809
	wgEncodeAwgTfbsHaibHepg2Tead4sc101184V0422111UniPk	23852	5964
	wgEncodeAwgTfbsHaibK562Tead4sc101184V0422111UniPk	48372	12094
	wgEncodeAwgTfbsHaibGm12878Yy1sc281Pcr1xUniPk	48142	12036
	wgEncodeAwgTfbsHaibGm12892Yy1V0416101UniPk	24763	6191
	wgEncodeAwgTfbsHaibH1hescYy1sc281V0416102UniPk	28672	7168
	wgEncodeAwgTfbsHaibHct116Yy1sc281V0416101UniPk	20043	5011

	wgEncodeAwgTfbsHaibHepg2Yy1sc281V0416101UniPk	27944	6986
	wgEncodeAwgTfbsHaibK562Yy1V0416101UniPk	19684	4922
	wgEncodeAwgTfbsHaibK562Yy1V0416102UniPk	37296	9324
	wgEncodeAwgTfbsHaibSknshraYy1sc281V0416102UniPk	24422	6106
	wgEncodeAwgTfbsSydhK562Yy1UcdUniPk	7638	1910
	wgEncodeAwgTfbsSydhNt2d1Yy1UcdUniPk	7465	1867
NFKB	wgEncodeAwgTfbsSydhGm10847NfkbTnfalgggrabUniPk	14545	3637
	wgEncodeAwgTfbsSydhGm12878NfkbTnfalgggrabUniPk	26700	6676
	wgEncodeAwgTfbsSydhGm12891NfkbTnfalgggrabUniPk	45032	11258
	wgEncodeAwgTfbsSydhGm12892NfkbTnfalgggrabUniPk	12865	3217
	wgEncodeAwgTfbsSydhGm18526NfkbTnfalgggrabUniPk	4820	1206
	wgEncodeAwgTfbsSydhGm19099NfkbTnfalgggrabUniPk	12190	3048
Pax5	wgEncodeAwgTfbsHaibGm12878Pax5c20Pcr1xUniPk	39841	9961
	wgEncodeAwgTfbsHaibGm12878Pax5n19Pcr1xUniPk	31012	7754
	wgEncodeAwgTfbsHaibGm12891Pax5c20V0416101UniPk	4979	1245
	wgEncodeAwgTfbsHaibGm12892Pax5c20V0416101UniPk	16284	4072
HDAC	wgEncodeAwgTfbsBroadK562Hdac2a300705aUniPk	8380	2096
	wgEncodeAwgTfbsBroadK562Hdac6a301341aUniPk	1779	445
	wgEncodeAwgTfbsHaibH1hescHdac2sc6296V0416102UniPk	8953	2239
	wgEncodeAwgTfbsHaibHepg2Hdac2sc6296V0416101UniPk	29865	7467
	wgEncodeAwgTfbsUchicagoK562Ehdac8UniPk	2734	684
	wgEncodeAwgTfbsHaibK562Hdac2sc6296V0416102UniPk	10539	2635
P300	wgEncodeAwgTfbsHaibGm12878P300Pcr1xUniPk	8052	2014
	wgEncodeAwgTfbsHaibHepg2P300V0416101UniPk	43721	10931
	wgEncodeAwgTfbsHaibSknshraP300V0416102UniPk	73086	18272
	wgEncodeAwgTfbsHaibT47dP300V0416102Dm002p1hUniPk	21969	5493
	wgEncodeAwgTfbsSydhGm12878P300bUniPk	9697	2425
	wgEncodeAwgTfbsSydhHelas3P300sc584sc584IggrabUniPk	40262	10066
	wgEncodeAwgTfbsSydhK562P300IggrabUniPk	40425	10107
ELF1	wgEncodeAwgTfbsHaibA549Elf1V0422111Etoh02UniPk	13468	3368
	wgEncodeAwgTfbsHaibGm12878Elf1sc631V0416101UniPk	35684	8922
	wgEncodeAwgTfbsHaibHepg2Elf1sc631V0416101UniPk	28315	7079
	wgEncodeAwgTfbsHaibK562Elf1sc631V0416102UniPk	43403	10851

Table S2: Details of different operations in TFBS-Finder

Operation	Parameter Settings	Output Shape
DNABERT		
Embedding	$k = 5$	(BatchSize, Seq_len , D)
CNN module		
$Conv_1$	Kernel Number= K_0 , Kernel Size = $\mathcal{K}_0$, Stride = S_0 , Padding = P_0	(BatchSize, K_0 , D)
MCBAM module		
MaxPool&AveragePool	-	(BatchSize, 1, D)
$Conv_2$	Kernel Number= K_1 , Kernel Size = $\mathcal{K}_2$, Stride = S_0 , Padding = P_1	(BatchSize, K_1 , D)
MaxPool&AveragePool	Kernel Number= K_0 , Kernel Size = Stride = D	(BatchSize, K_0 , 1)
$Conv_{3,1}$	Kernel Number= K_0 , Kernel Size = K_0/r , Stride = S_0	(BatchSize, K_0 , 1)
$Conv_{3,2}$	Kernel Number= K_0/r , Kernel Size = K_0 , Stride = S_0	(BatchSize, K_0 , 1)
MSCA module		
$Conv_{4,1}$	Kernel Number= K_0 , Kernel Size = $\mathcal{K}_0$, Padding = $\mathcal{K}_0/2$, Dilation = d_1	(BatchSize, K_0 , D)
$Conv_{4,2}$	Kernel Number= K_0 , Kernel Size = $\mathcal{K}_1$, Padding = $(\mathcal{K}_1/2)*d_2$, Dilation = d_2	(BatchSize, K_0 , D)
$Conv_{4,3}$	Kernel Number= K_0 , Kernel Size = $\mathcal{K}_2$, Padding = $(\mathcal{K}_2/2)*d_2$, Dilation = d_2	(BatchSize, K_0 , D)
$Conv_5$	Kernel Number= K_0 , Kernel Size = $\mathcal{K}_0$, Stride = S_0 , Padding = P_0	(BatchSize, K_0 , D)
Output module		
$Conv_6$	Kernel Number= K_2 , Kernel Size = $\mathcal{K}_0$, Stride = S_0 , Padding = P_0	(BatchSize, K_2 , D)
MaxPool	Kernel Size = $\mathcal{K}_0$, Stride = S_1	(BatchSize, K_2 , 383)
AveragePool	Kernel Size = $\mathcal{K}_0$, Stride = S_1	(BatchSize, K_2 , 383)
$Conv_7$	Kernel Number= K_3 , Kernel Size = $\mathcal{K}_0$, Stride = S_0 , Padding = P_0	(BatchSize, K_3 , 383)
$Conv_8$	Kernel Number= K_3 , Kernel Size = $\mathcal{K}_0$, Stride = S_0 , Padding = P_0	(BatchSize, K_3 , 383)
Flatten	-	(BatchSize, K_3*383)
Linear&Dropout	-	(BatchSize, K_3)
Linear&Softmax	-	(BatchSize, 2)

Table S3: Dimensions of the different Matrices

Matrix Name	Output Shape
DNABERT	
$\mathbf{M}_1$	(BatchSize, 97, 768)
CNN module	
$\mathbf{M}_2$	(BatchSize, 60, 768)
MCBAM module	
$\mathbf{M}_s$	(BatchSize, 1, 768)
$\mathbf{M}'_2$	(BatchSize, 60, 768)
$\mathbf{M}_c$	(BatchSize, 1, 768)
$\mathbf{M}_3$	(BatchSize, 1, 768)
MSCA module	
$\mathbf{M}''_2$	(BatchSize, 180, 768)
$\mathbf{M}'''_2$	(BatchSize, 60, 768)
$\mathbf{M}_4$	(BatchSize, 60, 768)
Output module	
$\mathbf{M}_5$	(BatchSize, 180, 383)
$\mathbf{M}_6$	(BatchSize, 180, 383)
$\mathbf{M}_7$	(BatchSize, 180, 383)

Table S4: Hyperparameters for TFBS-Finder

Hyperparameters	Values
Word embedding dimension D	768
Number of self attention heads	12
Number of encoders	12
Kernel number K_0, K_1, K_2, K_3	60, 1, 90, 180
Kernel Size $\mathcal{K}_0, \mathcal{K}_1, \mathcal{K}_2$	3 , 5, 7
Stride S_0, S_1	1, 2
Padding Size P_0, P_1	1, 3
Reduction Ratio r	12
Dilation Rate d_1, d_2	1, 2
Dimensionality Reduction Coefficient r	12

Table S5: Prediction performances for different values of k

TFs	Datasets	$k\text{-mer} = 3$			$k\text{-mer} = 4$			$k\text{-mer} = 5$			$k\text{-mer} = 6$		
		Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC
cebpb	wgEncodeAwgTfbsHaibHepg2Cebpbsc150V0416101UniPk	0.950322762	0.983452715	0.982602545	0.953002245	0.985332264	0.982918309	0.959994385	0.986693321	0.985199918	0.964496	0.985452	0.983801
	wgEncodeAwgTfbsHaibK562Cebpbsc150V0422111UniPk	0.940370669	0.971643503	0.972440671	0.937615101	0.973195291	0.96997482	0.950046041	0.974387294	0.972138796	0.945090	0.970884	0.967059
	wgEncodeAwgTfbsSydhA549CebpblggrabUniPk	0.969321922	0.987422934	0.988074853	0.964060032	0.987583963	0.987419167	0.972346589	0.987150426	0.987569749	0.970375	0.987137	0.987720
	wgEncodeAwgTfbsSydhH1hesCebpblggrabUniPk	0.959627329	0.97995803	0.983963692	0.954248366	0.987499415	0.985918144	0.969281046	0.988476523	0.989088256	0.965021	0.986959	0.986983
	wgEncodeAwgTfbsSydhHela3CebpblggrabUniPk	0.943362832	0.970143637	0.971726995	0.971047065	0.969721585	0.950472096	0.972561605	0.971742654	0.98420	0.972561605	0.971495	0.970774
	wgEncodeAwgTfbsSydhHepg2CebpblggrabUniPk	0.951095192	0.978367962	0.977372438	0.94570011	0.978975802	0.977314007	0.95576075	0.981414308	0.980629775	0.957157	0.983167	0.982045
	wgEncodeAwgTfbsSydhHepg2CebpblggrabUniPk	0.973340514	0.988815837	0.990046149	0.970601436	0.98962046	0.990610449	0.977154399	0.990550754	0.991458331	0.977649	0.990885	0.992045
	wgEncodeAwgTfbsSydhImr90CebpblggrabUniPk	0.963255933	0.980859777	0.983500731	0.957604258	0.983760882	0.984105865	0.967369112	0.982953364	0.984421068	0.963256	0.983531	0.983894
corest	wgEncodeAwgTfbsSydhHepg2Corestsc30189lggrabUniPk	0.962399047	0.983898167	0.985818434	0.95954714	0.985415371	0.985280809	0.964777542	0.982659606	0.983874441	0.956838	0.981523	0.981742
	wgEncodeAwgTfbsSydhHepg2Corestsc30189lggrabUniPk	0.830444965	0.880235441	0.896131539	0.869850187	0.918496277	0.922913481	0.871482176	0.923248894	0.928765257	0.842623	0.879507	0.894280
ctcf	wgEncodeAwgTfbsSydhK562Corestsc30189lggrabUniPk	0.911781446	0.95649785	0.956456496	0.90722823	0.956277092	0.952888808	0.930136596	0.956993611	0.955177665	0.932484	0.953117	0.951830
	wgEncodeAwgTfbsBroadDnd41CtcfUniPk	0.965227261	0.987245134	0.986170808	0.961153529	0.986138533	0.984407892	0.969252992	0.987378993	0.986084123	0.967755	0.987023	0.984988
	wgEncodeAwgTfbsBroadGm12878CtcfUniPk	0.957718894	0.98251797	0.979095521	0.949078341	0.981030648	0.977322467	0.962672811	0.983619304	0.980481291	0.959159	0.982264	0.978526
	wgEncodeAwgTfbsBroadH1hesCtcfUniPk	0.96437294	0.985642843	0.985965476	0.958604651	0.985686688	0.984840858	0.968754846	0.985809065	0.986089742	0.965924	0.985254	0.985592
	wgEncodeAwgTfbsBroadHela3CtcfUniPk	0.95035776	0.976703161	0.974011045	0.942311488	0.97709707	0.97227223	0.952575997	0.97824856	0.9735036	0.953170	0.977817	0.973346
	wgEncodeAwgTfbsBroadHepg2CtcfUniPk	0.9695931	0.988246393	0.986950256	0.96235073	0.986375439	0.984252269	0.970249945	0.988192109	0.986649398	0.968487	0.987345	0.985495
	wgEncodeAwgTfbsBroadHmecCtcfUniPk	0.971014493	0.989469815	0.987963541	0.964544513	0.989639538	0.987225509	0.975731297	0.990423684	0.98804913	0.970885	0.989587	0.987352
	wgEncodeAwgTfbsBroadHsmttCtcfUniPk	0.965234553	0.987296403	0.98600265	0.962348178	0.98667841	0.984966882	0.967712551	0.986494763	0.985319319	0.968777	0.985817	0.984462
	wgEncodeAwgTfbsBroadHsmttCtcfUniPk	0.962270235	0.98556959	0.983755915	0.95883491	0.98484108	0.981953398	0.966028811	0.984762813	0.982378418	0.964366	0.984588	0.982454
	wgEncodeAwgTfbsBroadHuveCtcfUniPk	0.963047069	0.987341114	0.985554167	0.958906938	0.985952685	0.983374111	0.969162996	0.986689464	0.985269084	0.968827	0.988249	0.985729
	wgEncodeAwgTfbsBroadK562CtcfUniPk	0.943961016	0.973137678	0.968639835	0.939488862	0.974907734	0.968699077	0.951462105	0.976088549	0.970273521	0.947243	0.974914	0.969507
	wgEncodeAwgTfbsBroadNhaCtcfUniPk	0.966280083	0.987613104	0.985999377	0.96152815	0.986496902	0.971842317	0.98845346	0.986037805	0.9868425	0.987186	0.984846	
	wgEncodeAwgTfbsBroadNhdafdCtcfUniPk	0.967304751	0.98719835	0.986633702	0.963728385	0.98659283	0.984851265	0.969679393	0.987806297	0.986699059	0.968940	0.987478	0.986487
	wgEncodeAwgTfbsBroadNhekCtcfUniPk	0.958228264	0.982811024	0.980891226	0.954605263	0.983054889	0.97978361	0.963651316	0.983848196	0.9808388	0.960860	0.982660	0.979581
	wgEncodeAwgTfbsBroadNhlCtcfUniPk	0.960944122	0.986581116	0.98424365	0.950704225	0.984430389	0.981602946	0.965962441	0.986673909	0.984416885	0.963487	0.985782	0.983184
	wgEncodeAwgTfbsBroadOsteobCtcfUniPk	0.955243976	0.981405802	0.977635001	0.947224285	0.980216804	0.974920249	0.956267409	0.980392509	0.97598774	0.954548	0.980274	0.975713
	wgEncodeAwgTfbsUtaGm12878CtcfUniPk	0.973525363	0.991832548	0.991585416	0.966116053	0.990959321	0.989869894	0.977388265	0.99044285	0.990754774	0.974002	0.990610	0.990709
	wgEncodeAwgTfbsUtaH1hesCtcfUniPk	0.964566696	0.986107222	0.987135834	0.951254141	0.982465192	0.982008584	0.968705632	0.987070837	0.98739737	0.966696	0.985353	0.985737
	wgEncodeAwgTfbsUtaHela3CtcfUniPk	0.975178241	0.991314768	0.991749894	0.971532911	0.991300024	0.991161802	0.979229009	0.99130544	0.992379363	0.977159	0.990762	0.991907
	wgEncodeAwgTfbsUtaK562CtcfUniPk	0.972405215	0.991713483	0.99192871	0.972171028	0.991404697	0.990797826	0.976594176	0.991718091	0.991821857	0.978947	0.992164	0.992436
	wgEncodeAwgTfbsUtaMcfc7CtcfUniPk	0.958346285	0.981472264	0.981947895	0.949511545	0.980776732	0.979135939	0.95980636	0.981901463	0.981569902	0.960655	0.981966	0.981139
	Average	0.955488482	0.979758569	0.979741757	0.951434975	0.981072564	0.982730916	0.961662948	0.982077816	0.981052706	0.959087822	0.980024	0.979076193

Table S6: Prediction performances of TFBS-Finder and the different variants on 165 ChIP-seq datasets

TFs	Datasets	Variant 1			Variant 2			Variant 3			Variant 4			Variant 5			TFBS-Finder		
		Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC
cebpb	wgEncodeAwgTfbsHaibHepg2Cebpbsc150V0416101UniPk	0.943742985	0.982039458	0.980776889	0.959994385	0.984359031	0.983740607	0.940934629	0.983596321	0.981633892	0.953116227	0.986350049	0.98556109	0.948483998	0.986998634	0.985538549	0.955502527	0.987393007	0.985953277
	wgEncodeAwgTfbsHaibK562Cebpbsc150V0422111UniPk	0.928291897	0.970200772	0.96779211	0.946938306	0.974458858	0.972060973	0.931169429	0.972405976	0.971328033	0.943370166	0.974737289	0.975622996	0.944981584	0.977469135	0.976382353	0.948089319	0.97665898	0.975587781
	wgEncodeAwgTfbsSydhA549CebpblggrabUniPk	0.9664297	0.987679554	0.987241482	0.970503029	0.98820997	0.98805569	0.946876297	0.985062032	0.984327982	0.954042666	0.983293964	0.98409353	0.95516197	0.985439588	0.98497523	0.958519884	0.985929372	0.985550138
	wgEncodeAwgTfbsSydhH1hesCebpblggrabUniPk	0.95375817	0.986483713	0.986501943	0.969117647	0.98726263	0.987255556	0.957026144	0.986516935	0.986432126	0.968137255	0.987725568	0.9884645	0.970588235	0.989548203	0.989526492	0.969281046	0.989643443	0.989628573
	wgEncodeAwgTfbsSydhHela3CebpblggrabUniPk	0.936362104	0.970255793	0.969322437	0.94971337	0.974053537	0.972808325	0.93724707	0.972483569	0.97091872	0.945329624	0.974380847	0.973449519	0.9746058	0.974819628	0.974054121	0.950092733	0.97455243	0.973618386
	wgEncodeAwgTfbsSydhHepg2CebpbforskUniPk	0.937982359	0.978083879	0.97612563	0.981573605	0.979689549	0.9570011	0.980485327	0.97206541	0.982484699	0.9805353	0.949007718	0.982160751	0.949007718	0.982160751	0.979927312	0.956725469	0.982966261	0.981204334
	wgEncodeAwgTfbsSydhHepg2CebpblggrabUniPk	0.971768402	0.990276192	0.9908445	0.976795332	0.991115286	0.991673259	0.97078097	0.990319053	0.990621127	0.976526032	0.988821663	0.991349673	0.978186715	0.992097777	0.992411955	0.977737882	0.991733052	0.992218217
	wgEncodeAwgTfbsSydhImr90CebpblggrabUniPk	0.959609216	0.982847589	0.983304653	0.966202421	0.984262097	0.984667144	0.955927049	0.982032451	0.98290062	0.960806475	0.981918259	0.983576046	0.964160712	0.983700729	0.984378625	0.965072189	0.983861001	0.98472832
	wgEncodeAwgTfbsSydhK562CebpblggrabUniPk	0.9609375	0.986133599	0.985472185	0.967690678	0.98530003	0.985295003	0.961003708	0.98720652	0.985812714	0.967955509	0.985721197	0.985906201	0.964884517	0.987237563	0.986536048	0.966498941	0.986239181	0.985852825
corest	wgEncodeAwgTfbsSydhHepg2Corestsc30189lggrabUniPk	0.880617978	0.925455403	0.933842409	0.872889306	0.930911653	0.937743535	0.891954066	0.920986068	0.92722405	0.88227017	0.924056594	0.924695744	0.863977487	0.914449187	0.913277606	0.924953096	0.952242292	0.956647165
	wgEncodeAwgTfbsSydhK562Corestsc30189lggrabUniPk	0.906089926	0.950383168	0.947492857	0.933338076	0.961639274	0.958684059	0.915694366	0.955166597	0.952373865	0.922381901	0.958423332	0.956033033	0.932270917	0.96182868	0.959464881	0.934262948	0.961864221	0.95963605
	wgEncodeAwgTfbsBroadDnd41CtcfUniPk	0.966054478	0.987045107	0.984964705	0.968943459	0.987320737	0.985500461	0.961256707	0.984424026	0.982790474	0.966931491	0.986349987	0.985056003	0.969356171	0.987242386	0.985556851	0.968943459	0.987497811	0.985760307
	wgEncodeAwgTfbsBroadGm12878CtcfUniPk	0.95921659	0.983353415	0.979437147	0.963364055	0.983980554	0.980666561	0.952419355	0.981392372	0.977948147	0.957258065	0.981741487	0.979665475	0.961347927	0.983652142	0.980437696	0.961463134	0.983785257	0.980505972
	wgEncodeAwgTfbsBroadH1hesCtcfUniPk	0.964922481	0.986402433	0.985509483	0.968677314	0.987706708	0.987282667	0.981899357	0.986522799	0.985315742	0.967746937	0.987492322	0.98704592	0.969220039	0.987974879	0.98721143	0.969607691	0.987680252	0.987076075
	wgEncodeAwgTfbsSydhK562Corestsc30189lggrabUniPk	0.951589025	0.977591946	0.972318974	0.953589306	0.974293614	0.949170944	0.977095177	0.975280648	0.96760363	0.979566964	0.956268975	0.956375839	0.980259933	0.967607991	0.985783656	0.979776008	0.979521846	
	wgEncodeAwgTfbsBroadHepg2CtcfUniPk	0.965833702	0.9874584	0.985517847	0.969807565	0.987510448	0.985687016	0.968045895	0.98848754	0.98631488	0.972738332	0.988550342	0.987236287	0.974286662	0.988971184	0.987324403	0.973788985	0.989657771	0.987782219
	wgEncodeAwgTfbsBroadHmccCtcfUniPk	0.971014493	0.990532647	0.988199393	0.973142635	0.990676135	0.988563184	0.965967842	0.989054635	0.986507906	0.97230132	0.990590856	0.988970991	0.973789801	0.990752107	0.9887381	0.975472431	0.991430564	0.989451291
	wgEncodeAwgTfbsBroadHsmmCtcfUniPk	0.965587045	0.987034971	0.985128483	0.969838057	0.98729833	0.985921467	0.96789474	0.986049736	0.984481844	0.967054656	0.985864527	0.984919033	0.96958502	0.98736457	0.98586743	0.969635628	0.987054608	0.985723483
	wgEncodeAwgTfbsBroadHsmmCtcfUniPk	0.962381771	0.985277429	0.982381315	0.965813803	0.984795664	0.985569645	0.961952507	0.9885153791	0.984203314	0.968393894	0.985506345	0.983291783	0.98447645	0.98557733	0.983327287	0.969092668	0.986114074	0.98348985
	wgEncodeAwgTfbsBroadHuvecCtcfUniPk	0.966203194	0.986975837	0.984760553	0.969507159	0.987441776	0.985289078	0.96344989	0.987184124	0.984500649	0.973361784	0.988402523	0.986081639	0.973155286	0.988279307	0.986281694	0.972053965	0.9883694	0.986245041

elf1	wgEncodeAwgTibsBroadK562CtcfUniPk	0.944063246	0.974658791	0.96831636	0.948826338	0.975649454	0.969347806	0.944411622	0.973384039	0.96779791	0.948378754	0.974735467	0.969736326	0.952307538	0.976807199	0.971226054	0.953103242	0.976834832	0.971203987
	wgEncodeAwgTibsBroadNhaCtcfUniPk	0.967426273	0.987359153	0.985016438	0.97224457	0.98877456	0.986477014	0.96581107	0.987212328	0.985071356	0.971037811	0.988597497	0.98698856	0.973250201	0.988595154	0.98666748	0.973384285	0.988973697	0.986782911
	wgEncodeAwgTibsBroadNhlfadCtcfUniPk	0.966733446	0.987778454	0.986489622	0.969837587	0.988378001	0.987138624	0.964203334	0.98603132	0.984978939	0.986308373	0.98727941	0.98693336	0.970417633	0.987833728	0.986601523	0.971894115	0.988161987	0.987115533
	wgEncodeAwgTibsBroadNhekCtcfUniPk	0.957127193	0.98340929	0.980243968	0.962390351	0.983841688	0.980951316	0.952631579	0.981652573	0.97885822	0.961951754	0.983824788	0.981228375	0.961348684	0.983326318	0.980910633	0.963760965	0.98419743	0.981539612
	wgEncodeAwgTibsBroadNhlfCtcfUniPk	0.962310902	0.984451571	0.98142765	0.962962963	0.985910463	0.983226693	0.960485133	0.98521079	0.982144702	0.964136672	0.986258984	0.984143507	0.967723005	0.987295616	0.984995105	0.967201356	0.987163042	0.98473336
	wgEncodeAwgTibsBroadOstebolCtcfUniPk	0.950705533	0.979620129	0.974639078	0.955292479	0.98064512	0.975846272	0.947827814	0.977078719	0.973031189	0.95167131	0.980061681	0.976128657	0.954688951	0.981246327	0.976762044	0.956870938	0.981178629	0.976694321
	wgEncodeAwgTibsUtaGm12878CtcfUniPk	0.971886912	0.991128593	0.990653071	0.977123491	0.992502646	0.991844517	0.97236335	0.991569017	0.991053877	0.976276213	0.991798365	0.991710867	0.9755878	0.992054368	0.991635119	0.977123491	0.991840014	0.97160841
	wgEncodeAwgTibsUtaH1hesecCtcfUniPk	0.964505442	0.985500757	0.985309946	0.9771071936	0.987048865	0.987530506	0.959417889	0.985392089	0.984827588	0.966694273	0.985924872	0.986625691	0.968469001	0.987500209	0.987875669	0.970125414	0.988094016	0.988092651
	wgEncodeAwgTibsUtaHela3CtcfUniPk	0.976592749	0.991748445	0.991961197	0.978392889	0.992074806	0.992163572	0.975492893	0.990421675	0.990656002	0.977028692	0.99153365	0.991964998	0.979405035	0.992598387	0.992532782	0.979845098	0.992050928	0.992549324
	wgEncodeAwgTibsUtaK562CtcfUniPk	0.977469591	0.99282763	0.99244443	0.978621452	0.992905288	0.992666518	0.974566901	0.991206198	0.990615434	0.977285293	0.991708182	0.991681022	0.979865463	0.992227387	0.991995721	0.978667527	0.992386038	0.992031219
ezh2	wgEncodeAwgTibsUtaMc7fCtcfUniPk	0.955994671	0.981147782	0.980046523	0.961582874	0.983269368	0.98205137	0.956128493	0.981936955	0.980526941	0.962693196	0.982517602	0.982016827	0.964736187	0.983850996	0.982742312	0.96322615	0.983464163	0.982502335
	wgEncodeAwgTibsHaibA549Elf1V0422111Etoh02UniPk	0.906175772	0.943212841	0.945069475	0.922209026	0.948494098	0.948543559	0.89946017	0.940340637	0.942732126	0.920130641	0.951790639	0.953150675	0.934679335	0.957227097	0.958641839	0.934976247	0.956746846	0.957447049
	wgEncodeAwgTibsHaibGm12878Elf1sc631V0416101UniPk	0.912634409	0.941036144	0.941526304	0.911474675	0.941807657	0.943684488	0.901887143	0.940092121	0.941801737	0.899036307	0.943405382	0.944140732	0.924137159	0.949401424	0.950934359	0.921896011	0.950035048	0.951222768
	wgEncodeAwgTibsHaibHepg2Elf1sc631V0416101UniPk	0.923446328	0.961512054	0.961990716	0.941101695	0.964755103	0.964987254	0.921468927	0.958872286	0.959293394	0.929237288	0.962785628	0.963430268	0.938418079	0.966805845	0.967240904	0.941666667	0.966951698	0.967416537
	wgEncodeAwgTibsHaibK562Elf1sc631V0416102UniPk	0.932663965	0.966277826	0.966220723	0.945539993	0.969385896	0.969048379	0.933678248	0.967975068	0.967496251	0.940563952	0.969230653	0.969272235	0.944434206	0.970551607	0.970724939	0.94747512	0.971450647	0.971448522
	wgEncodeAwgTibsBroadDmd41Ezh239875UniPk	0.947916667	0.979437029	0.97972979	0.860119048	0.944563072	0.946326453	0.8888869048	0.888882809	0.88762309	0.860119048	0.921256759	0.918981256	0.913690477	0.956871754	0.959415225	0.916666667	0.96123671	0.962138618
	wgEncodeAwgTibsBroadHela3Ezh239875UniPk	0.950842697	0.956892907	0.967741935	0.882022472	0.917469726	0.925381983	0.845505618	0.896937567	0.903621029	0.839887641	0.891899275	0.897953537	0.889044944	0.924022844	0.935444348	0.890449438	0.926615793	0.93887488
	wgEncodeAwgTibsBroadHepg2Ezh239875UniPk	0.913109756	0.939169105	0.949330173	0.875762195	0.929270317	0.930593607	0.878810976	0.921802114	0.9215797	0.883384146	0.938510316	0.943990147	0.81097564	0.954488492	0.947543193	0.913109756	0.957769357	0.963079926
	wgEncodeAwgTibsBroadHsmmEzh239875UniPk	0.933441558	0.981730708	0.981964879	0.857142857	0.924808448	0.923545852	0.801948051	0.8803927	0.87544165	0.823051947	0.899655906	0.898054105	0.899350649	0.958830552	0.952612983	0.894480519	0.957669656	0.9554079
	wgEncodeAwgTibsBroadHuvceEzh239875UniPk	0.913732394	0.94313207	0.96208632	0.890588235	0.934329852	0.94035356	0.862167909	0.918222817	0.924739817	0.885882352	0.940123821	0.90171674	0.951680525	0.954901285	0.900588235	0.956719893	0.951443723	
fos	wgEncodeAwgTibsBroadK562Ezh239875UniPk	0.912202381	0.959291976	0.968019943	0.849702381	0.929528162	0.934419516	0.793154762	0.87466771	0.873246083	0.827380952	0.902674793	0.90715812	0.888392857	0.95477372	0.95494124	0.891369048	0.958288526	0.958823006
	wgEncodeAwgTibsHaibA549Fosl2V0422111Etoh02UniPk	0.932183703	0.969087836	0.964738269	0.943332142	0.971891585	0.967787359	0.944783553	0.9744045051	0.969038122	0.938684305	0.973353572	0.969657476	0.948873794	0.974950965	0.970305732	0.950214516	0.975199459	0.970925562
	wgEncodeAwgTibsHaibH1hesecFosl1sc183V0416102UniPk	0.911363636	0.975697367	0.973420966	0.911363636	0.973005761	0.969494048	0.786363637	0.810492893	0.820395171	0.772727277	0.84769251	0.842675264	0.890909091	0.955185316	0.949983465	0.875	0.95633997	0.950293485
	wgEncodeAwgTibsHaibHepg2Fosl2V0416101UniPk	0.905947581	0.94923215	0.95380664	0.937701613	0.967048454	0.961423978	0.890770161	0.959976367	0.95418845	0.923237097	0.967046815	0.962420481	0.95865484	0.96077751	0.965450992	0.939415323	0.971350875	0.96091938
	wgEncodeAwgTibsHaibK562Fosl1sc183V0416101UniPk	0.936363636	0.9765625	0.974047521	0.95177434	0.982966553	0.979084906	0.922046489	0.970117884	0.966683375	0.951319382	0.983229329	0.980051023	0.959736124	0.985137445	0.9819609	0.960646042	0.985219685	0.982015648
	wgEncodeAwgTibsSydhGm12878CfoslUniPk	0.941513761	0.974454438	0.97188156	0.93233945	0.970960766	0.963603075	0.889908256	0.948934332	0.943610546	0.939220183	0.970427903	0.965544455	0.951834862	0.980509247	0.974783108	0.958715596	0.987099865	0.98216456
	wgEncodeAwgTibsSydhHela3CfoslUniPk	0.909768212	0.962004721	0.960757347	0.949053311	0.974343133	0.972752494	0.894039735	0.94952165	0.944865544	0.943156732	0.974818151	0.970639089	0.95115894	0.978382242	0.975105594	0.953918322	0.979633816	0.975927169
	wgEncodeAwgTibsSydhHuvceCfoslUniPk	0.943445857	0.973709235	0.970468971	0.952641964	0.975986469	0.972758649	0.894634309	0.97326797	0.971033635	0.947379691	0.975177824	0.952737398	0.952582777	0.98181325	0.973139226	0.955656654	0.973604901	0.973652647
	wgEncodeAwgTibsSydhK562CfoslUniPk	0.918449198	0.960699018	0.96395042	0.95421123	0.978821703	0.979530968	0.927473262	0.966455719	0.968145433	0.947526738	0.976360998	0.978940043	0.95354278	0.98450157	0.983652702	0.959893048	0.985008747	0.984643088
	wgEncodeAwgTibsSydhMcfl1oascFosl12hHvdUniPk	0.959653134	0.980589557	0.980632993	0.96617401	0.983312216	0.983419225	0.963222294	0.982577554	0.982228107	0.963552705	0.982477597	0.982830828	0.965978807	0.983136951	0.983210937	0.965755717	0.983470857	0.983582746
foxa1	wgEncodeAwgTibsSydhMcfl1oascFosl14hHvdUniPk	0.958711217	0.980554441	0.980134886	0.963842482	0.982384866	0.982303489	0.956622911	0.980733021	0.980499724	0.960053699	0.981633369	0.981751297	0.961813842	0.982000133	0.982081065	0.962974494	0.982641873	0.982432063
	wgEncodeAwgTibsSydhMcfl1oascFoslTmHvdUniPk	0.961634025	0.983264544	0.983179127	0.968684201	0.984984107	0.985734529	0.93947457	0.985301282	0.985423801	0.964734688	0.980502632	0.985254819	0.966452273	0.985435496	0.985833323	0.967731326	0.985919882	0.986052643
	wgEncodeAwgTibsUchicagoK562EfoslUniPk	0.946428571	0.98219319	0.97939012	0.955605159	0.981972241	0.979484356	0.922619048	0.977036136	0.973304849	0.94890873	0.982074507	0.980346756	0.958333333	0.984491156	0.981917037	0.958581349	0.984476095	0.981928356
	wgEncodeAwgTibsHaibA549Foxa1V0416102Dmc100mm1pUniPk	0.896551724	0.934725064	0.934042439	0.898872679	0.943233707	0.942057139	0.874005304	0.921769253	0.918014593	0.898541113	0.943005375	0.9405308	0.917108753	0.94974425	0.950910615	0.913129973	0.95129008	0.950918751
	wgEncodeAwgTibsHaibEcc1Foxa1sc6553V0416102Dm002p1hUniPk	0.888316151	0.934454918	0.939464793	0.894578313	0.9556477	0.953256366	0.881882463	0.936197233	0.932842465	0.8857111875	0.950709259	0.948135953	0.895438898	0.961019582	0.958083855	0.901893287	0.959879113	0.957340394
	wgEncodeAwgTibsHaibHepg2Foxa1sc101058V0416101UniPk	0.930647556	0.968932865	0.968813751	0.934247276	0.9774003901	0.972131131	0.944931312	0.947370164	0.978182741	0.952747513	0.976188875	0.975185571	0.955708195	0.962728854	0.975273235	0.974697762	0.973637583	
	wgEncodeAwgTibsHaibHepg2Foxa1sc6553V0416101UniPk	0.943209015	0.974025565	0.973052669	0.956072996	0.977706138	0.977104249	0.949291982	0.97136358	0.974810618	0.951336258	0.976196032	0.97617534	0.956920622	0.978319037	0.977976143	0.958516155	0.978160245	0.977744452
	wgEncodeAwgTibsHaibT47dFoxa1sc6553V0416102Dm002p1hUniPk	0.932230392	0.968308108	0.965826008	0.946249081	0.972014454	0.969884869	0.936091332	0.969923988	0.967762066	0.938587889	0.970995911	0.969457472	0.94502329	0.972701009	0.970867703	0.945452317	0.97310583	0.971

jund	wgEncodeAwgTfbsSydhHepg2CjunIgrabUniPk	0.944178628	0.982581662	0.979449214	0.958898643	0.982704342	0.979948024	0.948167301	0.982307536	0.977709798	0.957701516	0.98463335	0.980679657	0.961492418	0.985845617	0.982255747	0.962889066	0.985839286	0.982198341
	wgEncodeAwgTfbsSydhHuvecCjunUniPk	0.94556172	0.980537253	0.979226235	0.9578564	0.982038096	0.981203018	0.931862097	0.97839064	0.977001138	0.952566771	0.981851777	0.981545775	0.954387791	0.983401381	0.982345571	0.956468956	0.98373673	0.982780969
	wgEncodeAwgTfbsSydhK562CjunUniPk	0.898760331	0.961531742	0.961086528	0.949327818	0.974964539	0.972857983	0.911162901	0.962694925	0.960800444	0.953981386	0.978128719	0.976357723	0.957859359	0.979143752	0.977778825	0.955015512	0.977371121	0.976042496
	wgEncodeAwgTfbsHaibHepg2JundPcr1xUniPk	0.892572634	0.952572855	0.948666771	0.934512652	0.967009597	0.962253849	0.911082474	0.958899413	0.954094147	0.924437676	0.966999587	0.961188258	0.953684161	0.970669395	0.965501073	0.939550141	0.970267557	0.965753801
	wgEncodeAwgTfbsSydhGm12878JundUniPk	0.93647541	0.974673656	0.979697506	0.93442623	0.965005943	0.967677789	0.863729508	0.933401631	0.93950118	0.912909836	0.963744312	0.968158072	0.9375	0.970030532	0.975796259	0.93852459	0.970917548	0.976423997
	wgEncodeAwgTfbsSydhH1hesJundIgrabUniPk	0.870212766	0.938196088	0.937668223	0.927050053	0.961913517	0.957891192	0.904274862	0.94354204	0.941309217	0.915601704	0.952939765	0.951511031	0.93343983	0.962283858	0.961240359	0.931576145	0.961444237	0.960435997
	wgEncodeAwgTfbsSydhHelas3JundIgrabUniPk	0.931810793	0.970580791	0.967201442	0.950747724	0.974153798	0.97101506	0.939206762	0.976297023	0.970961685	0.950747725	0.976430704	0.97354881	0.951723017	0.978147643	0.974161152	0.958875163	0.979700207	0.976706462
	wgEncodeAwgTfbsSydhHepg2JundIgrabUniPk	0.961320755	0.984954308	0.982423054	0.963993711	0.985808947	0.983671437	0.960602893	0.986087264	0.982715703	0.968081761	0.98629812	0.984884134	0.969654088	0.988341505	0.985672265	0.969889937	0.9880697	0.98536168
max	wgEncodeAwgTfbsSydhK562JundIgrabUniPk	0.922082059	0.96204711	0.959551083	0.945895998	0.97285151	0.970359288	0.933868177	0.966140684	0.963584521	0.942900841	0.971116923	0.968995843	0.949209788	0.972769007	0.970556154	0.949209788	0.972671042	0.970416542
	wgEncodeAwgTfbsUchicagoK562JundUniPk	0.90419219	0.958572135	0.952653603	0.931731137	0.963355483	0.958309396	0.913286635	0.958666385	0.953546673	0.921964764	0.961833227	0.95766548	0.933263118	0.964928727	0.960266296	0.933741861	0.965570726	0.96085864
	wgEncodeAwgTfbsHaibK562MaxV0416102UniPk	0.905751708	0.942192811	0.938378942	0.925683371	0.950530439	0.947571796	0.907232346	0.944717384	0.940731946	0.917198177	0.947519448	0.944786485	0.927107061	0.951879248	0.94888765	0.926879271	0.951937826	0.948597368
	wgEncodeAwgTfbsSydhGm12878MaxIggmsUniPk	0.90210356	0.927621952	0.928986035	0.9048583	0.932427041	0.933547498	0.900906345	0.929471035	0.931412721	0.864979757	0.925493904	0.921454034	0.920040486	0.945964688	0.944794299	0.910728745	0.944695349	0.944293128
	wgEncodeAwgTfbsSydhH1hesCMaxUcdUniPk	0.91848816	0.957864861	0.957875932	0.934198543	0.958802923	0.961176406	0.87295082	0.942891634	0.941180316	0.925318761	0.963140586	0.964825069	0.933515483	0.966767132	0.967743418	0.944899818	0.967637387	0.969034155
	wgEncodeAwgTfbsSydhHelas3MaxIgrabUniPk	0.887889273	0.922882909	0.925293962	0.908099688	0.93465811	0.93643112	0.898706075	0.931342469	0.93342416	0.904638283	0.933903199	0.935881572	0.91268605	0.93964854	0.941608506	0.91588785	0.939198882	0.941591117
	wgEncodeAwgTfbsSydhHepg2MaxIgrabUniPk	0.915459966	0.949743009	0.946538314	0.916098807	0.948956521	0.944844161	0.910775128	0.93987807	0.939343967	0.912265758	0.947621414	0.946640978	0.918015332	0.952018791	0.951148079	0.920783646	0.952201945	0.951302439
	wgEncodeAwgTfbsSydhHuvecMaxUniPk	0.934035477	0.964348671	0.965231096	0.925083241	0.964002808	0.963018739	0.86917191	0.939223039	0.939089613	0.919256382	0.962655286	0.964318204	0.927857936	0.967925442	0.968120208	0.929522752	0.968975224	0.968849473
myc	wgEncodeAwgTfbsSydhK562MaxIgrabUniPk	0.901524984	0.937274407	0.934802321	0.923588579	0.946110003	0.945096853	0.889600908	0.938585364	0.936834582	0.91109669	0.944212168	0.943200097	0.922615185	0.947806064	0.946820243	0.926184296	0.947712134	0.947011115
	wgEncodeAwgTfbsSydhNb4MaxUniPk	0.903275558	0.943590302	0.942984816	0.927857773	0.951873575	0.949913405	0.894903573	0.943138163	0.942045357	0.908977373	0.946857418	0.945416513	0.925286512	0.953465206	0.951915131	0.928665883	0.952897059	0.951446807
	wgEncodeAwgTfbsSydhNb4CmycUniPk	0.895155039	0.928264185	0.927641184	0.914598682	0.938927656	0.938736503	0.885757167	0.923179482	0.923643447	0.894048081	0.928329646	0.929288339	0.912369136	0.93518031	0.936040207	0.913920124	0.936986807	0.9378661
	wgEncodeAwgTfbsUtaGm12878CmycUniPk	0.892076503	0.942257403	0.942912122	0.878082192	0.930912545	0.929165939	0.852655514	0.909685887	0.905295284	0.876027398	0.933413948	0.927313639	0.927397261	0.971743536	0.967217852	0.906164384	0.960087103	0.956873497
	wgEncodeAwgTfbsUtaH1hesCmycUniPk	0.909836066	0.9656901	0.964777614	0.834016393	0.924504129	0.914522306	0.729508197	0.820628049	0.797567858	0.766393442	0.862983378	0.850359447	0.846311475	0.930469088	0.921257727	0.852459016	0.933079197	0.926011153
	wgEncodeAwgTfbsUtaHepg2CmycUniPk	0.913636364	0.956580467	0.959002252	0.892938497	0.943801913	0.944430679	0.874497825	0.923477925	0.92798489	0.908883827	0.945039053	0.948749149	0.920273348	0.951751503	0.956612291	0.923690205	0.954745605	0.959209989
	wgEncodeAwgTfbsSydhGm10847NfkbTnfalgrabUniPk	0.87967033	0.932109738	0.938917213	0.914010989	0.940897144	0.945289549	0.848901099	0.917977788	0.922503293	0.914835165	0.950194177	0.953717589	0.925824176	0.952173961	0.959112283	0.927197802	0.952697345	0.958203955
	nfkb	wgEncodeAwgTfbsSydhGm12878NfkbTnfalgrabUniPk	0.901946108	0.940130164	0.941209754	0.919712403	0.948769329	0.948400359	0.903295655	0.94211214	0.942245197	0.897693229	0.948430292	0.948585376	0.919113241	0.95462174	0.95571533	0.923906531	0.954948111
wgEncodeAwgTfbsSydhGm12891NfkbTnfalgrabUniPk		0.894708807	0.945486624	0.941132398	0.919982238	0.952541706	0.947389229	0.901811584	0.946469538	0.941783953	0.913765542	0.952438834	0.946900905	0.919182948	0.950661145	0.950863529	0.926198934	0.955128937	0.949887728
wgEncodeAwgTfbsSydhGm12892NfkbTnfalgrabUniPk		0.895781638	0.935999163	0.940953556	0.913975155	0.945197346	0.945587963	0.882150948	0.939593348	0.940411989	0.909627329	0.951435179	0.952992284	0.92173913	0.957311908	0.958415509	0.923602484	0.95691688	0.95859973
wgEncodeAwgTfbsSydhGm18526NfkbTnfalgrabUniPk		0.94205298	0.956864964	0.97274797	0.902317881	0.934543924	0.946609612	0.884933775	0.9309468	0.940851986	0.89321192	0.933422811	0.947438007	0.920529801	0.944377317	0.960577134	0.923013274	0.945829298	0.962823678
wgEncodeAwgTfbsSydhGm19099NfkbTnfalgrabUniPk		0.892060367	0.947572651	0.95054804	0.937335958	0.961085027	0.960314665	0.909120735	0.950408224	0.949972482	0.905511811	0.956823986	0.954151903	0.936351706	0.968000463	0.967386736	0.937007874	0.966319256	0.966215594
wgEncodeAwgTfbsHaibGm12878P300Pcr1xUniPk		0.89781746	0.922848654	0.932204724	0.877480159	0.922835345	0.922542323	0.955357143	0.948969856	0.962187008	0.94593254	0.959299455	0.968735236	0.920634921	0.95427087	0.955081201	0.91468254	0.952384406	0.954917323
wgEncodeAwgTfbsHaibHepg2P300V0416101UniPk		0.894294075	0.948230506	0.947428123	0.934504208	0.960871867	0												

	wgEncodeAwgTfbsHaibGm12878Taf1Pcr1xUniPk	0.887893983	0.91689409	0.922330814	0.887634409	0.920558775	0.925042741	0.88163429	0.917645932	0.923419451	0.859498208	0.913176032	0.919051166	0.886021505	0.927912675	0.933072126	0.892831541	0.928793038	0.934314916
	wgEncodeAwgTfbsHaibGm12892Taf1V0416102UniPk	0.916396104	0.942711789	0.941551383	0.908549784	0.938237239	0.935073328	0.785443723	0.868380807	0.857721867	0.899891775	0.943250959	0.94265268	0.924512987	0.95295235	0.954347761	0.923430736	0.951575024	0.952298754
	wgEncodeAwgTfbsHaibHepg2Taf1Pcr2xUniPk	0.900851198	0.918849501	0.92577213	0.899117276	0.915805819	0.922817888	0.876733922	0.919675572	0.924123832	0.895649432	0.926305112	0.931743627	0.90242749	0.9316498	0.937218419	0.908102144	0.932080525	0.937359902
	wgEncodeAwgTfbsHaibK562Taf1V0416101UniPk	0.884720327	0.927214631	0.928548271	0.893003413	0.93269209	0.933399509	0.868695668	0.927669652	0.927097997	0.868088737	0.933843718	0.932436118	0.894880546	0.94341045	0.94295124	0.897952218	0.943234905	0.942443306
	wgEncodeAwgTfbsHaibSknsHTaf1V0416101UniPk	0.905474453	0.927922634	0.934874654	0.914233577	0.933087443	0.939099537	0.889233576	0.919618567	0.926037827	0.89489051	0.92970952	0.935072181	0.917700729	0.936381332	0.942585324	0.919708029	0.939001105	0.944282411
tbpi	wgEncodeAwgTfbsSydhGm12878TbplggmusUniPk	0.883241758	0.912457917	0.920233379	0.908762887	0.928617903	0.931893469	0.866655337	0.901400849	0.908361453	0.86434106	0.911253484	0.915600451	0.878086765	0.917557601	0.922420494	0.883756868	0.917429597	0.922914289
	wgEncodeAwgTfbsSydhH1hescCtbp2UcdUniPk	0.903846154	0.92982423	0.935218242	0.883547009	0.907959494	0.914283685	0.821937322	0.893917655	0.893376524	0.732549858	0.854749232	0.845398117	0.852920228	0.913125515	0.915786403	0.851851852	0.911842038	0.913618065
	wgEncodeAwgTfbsSydhHepg2TbplggrabUniPk	0.885294118	0.917739364	0.923999154	0.902685798	0.937791803	0.939575351	0.855778335	0.909458288	0.912588912	0.840233412	0.909236035	0.910126664	0.875737459	0.924880884	0.928718124	0.872794118	0.922015627	0.926061582
	wgEncodeAwgTfbsSydhK562TbplggmusUniPk	0.881140351	0.924581839	0.923358884	0.902192982	0.942081792	0.938549147	0.856871345	0.915860133	0.912941404	0.812719298	0.89427774	0.88847139	0.870906433	0.928012761	0.925004431	0.876169591	0.928687109	0.925347152
tead4	wgEncodeAwgTfbsHaibH1hescTead4sc101184V0422111UniPk	0.930143296	0.969295986	0.96716097	0.940220174	0.971344838	0.968626094	0.906500039	0.962501782	0.958832902	0.917472123	0.965797386	0.96208662	0.924256557	0.968689516	0.965147856	0.926944729	0.970076408	0.966535946
	wgEncodeAwgTfbsHaibHepg2Tead4sc101184V0422111UniPk	0.892761394	0.939213623	0.938600381	0.918175721	0.951846281	0.950533806	0.867510807	0.924845223	0.922693692	0.866438353	0.931125767	0.928633408	0.885553042	0.93631344	0.934889624	0.89041555	0.93832116	0.936591945
	wgEncodeAwgTfbsHaibK562Tead4sc101184V0422111UniPk	0.900462963	0.945929154	0.943434531	0.92650463	0.953997201	0.952203873	0.867724868	0.937285572	0.933842858	0.880704365	0.94036154	0.938768239	0.895171958	0.945987913	0.943436282	0.89905754	0.946879022	0.944191757
yy1	wgEncodeAwgTfbsHaibGm12878Yy1sc281Pcr1xUniPk	0.91345515	0.950809338	0.946044739	0.930624792	0.960333134	0.954637809	0.884576918	0.938595895	0.934366054	0.886372969	0.944020316	0.939196963	0.900995768	0.949364402	0.94386832	0.903737542	0.949305852	0.944030902
	wgEncodeAwgTfbsHaibGm12892Yy1V0416101UniPk	0.913275194	0.950777908	0.949197622	0.928456072	0.958072969	0.955829377	0.865794574	0.933225927	0.929334248	0.88501292	0.943487007	0.94047726	0.897609819	0.947995803	0.945417764	0.89874031	0.947688631	0.945154965
	wgEncodeAwgTfbsHaibH1hescYy1sc281V0416102UniPk	0.908761161	0.951204724	0.95128986	0.932896205	0.957911142	0.957439869	0.850864956	0.929666861	0.928893314	0.8828125	0.941335233	0.942059999	0.884905134	0.946373887	0.946964272	0.895228795	0.947177351	0.947199624
	wgEncodeAwgTfbsHaibHet116Yy1sc281V0416101UniPk	0.907097289	0.943772371	0.941218015	0.921588188	0.953575351	0.949437432	0.867691702	0.926591971	0.922636006	0.879771483	0.93693771	0.933494626	0.895733175	0.941176209	0.938447961	0.896331738	0.941345127	0.938991475
	wgEncodeAwgTfbsHaibHepg2Yy1sc281V0416101UniPk	0.891447368	0.930215382	0.930393341	0.908271322	0.940097998	0.93955102	0.865337719	0.9123488	0.912955197	0.861971454	0.917019793	0.915608688	0.884152336	0.928886935	0.928348386	0.885869565	0.927902056	0.928387117
	wgEncodeAwgTfbsHaibK562Yy1V0416101UniPk	0.918222403	0.945126457	0.947630766	0.92018684	0.950076627	0.949709922	0.869386591	0.92220211	0.926926398	0.871529883	0.931978436	0.935282653	0.894275619	0.94209679	0.944086725	0.896712662	0.940172369	0.943311138
	wgEncodeAwgTfbsHaibK562Yy1V0416102UniPk	0.90834048	0.953278074	0.950307795	0.928571429	0.957247605	0.95460316	0.882109275	0.942445058	0.939356574	0.893970943	0.94700554	0.944644389	0.902979952	0.951221538	0.948399817	0.903730703	0.950386163	0.948015218
	wgEncodeAwgTfbsHaibSknsHraYy1sc281V0416102UniPk	0.904777487	0.940836974	0.940321747	0.914210871	0.946145242	0.945138884	0.862790024	0.916931131	0.917657948	0.878754517	0.928785751	0.928971271	0.890051177	0.932709193	0.932548648	0.891852094	0.933600511	0.933329443
	wgEncodeAwgTfbsSydhK562Yy1UcdUniPk	0.933577406	0.972125436	0.969200787	0.945083682	0.977936979	0.973603958	0.8666318	0.934743569	0.925640698	0.894351465	0.955161627	0.948320745	0.907949791	0.960795265	0.954020574	0.905857741	0.961748466	0.955364285
	wgEncodeAwgTfbsSydhNt2d1Yy1UcdUniPk	0.936965812	0.964572782	0.965988445	0.925588865	0.969607633	0.96663611	0.893349989	0.944622683	0.93997878	0.895821895	0.955779395	0.950150479	0.902245878	0.959102929	0.954270492	0.901175214	0.958704727	0.954373306
	Average	0.918430838	0.954580642	0.95548958	0.925243447	0.957417111	0.956665616	0.900911915	0.942825765	0.942457507	0.909681348	0.950541074	0.950047172	0.927683226	0.961186294	0.961030789	0.930309066	0.961723727	0.961696438

Table S7: Cross cell-line validation data set

Cell Line	TFs	Datasets	Train		Test	
			#Positive	#Negative	#Positive	#Negative
Gm12878	CTCF	wgEncodeAwgTfbsBroadGm12878CtcfUniPk	71761	71761	8644	37098
	ELF1	wgEncodeAwgTfbsHaibGm12878Elf1sc631V0416101UniPk			18064	4446
	PCR2	wgEncodeAwgTfbsHaibGm12878GabpPcr2xUniPk			18064	1276
	P300	wgEncodeAwgTfbsHaibGm12878P300Pcr1xUniPk			18064	999
	Pax5	wgEncodeAwgTfbsHaibGm12878Pax5c20Pcr1xUniPk			18064	4897
	Pax5	wgEncodeAwgTfbsHaibGm12878Pax5n19Pcr1xUniPk			18064	3896
	TAF1	wgEncodeAwgTfbsHaibGm12878Taf1Pcr1xUniPk			18064	2787
	YY1	wgEncodeAwgTfbsHaibGm12878Yy1sc281Pcr1xUniPk			18064	6079
	FOS	wgEncodeAwgTfbsSydhGm12878CfosUniPk			18064	431
	JUND	wgEncodeAwgTfbsSydhGm12878JundUniPk			18064	459
	MAX	wgEncodeAwgTfbsSydhGm12878MaxIggmusUniPk			18064	2470
	NFKB	wgEncodeAwgTfbsSydhGm12878NfkbTnfalgggrabUniPk			18064	3343
	P300	wgEncodeAwgTfbsSydhGm12878P300bUniPk			18064	1181
	STAT3	wgEncodeAwgTfbsSydhGm12878Stat3IggmusUniPk			18064	1248
	TBPI	wgEncodeAwgTfbsSydhGm12878TbplggmusUniPk			18064	2865
	MYC	wgEncodeAwgTfbsUtaGm12878CmycUniPk			18064	721
	CTCF	wgEncodeAwgTfbsUtaGm12878CtcfUniPk			9420	37098
Hela3	CTCF	wgEncodeAwgTfbsBroadHela3CtcfUniPk	84901	84901	10163	41890
	EZH2	wgEncodeAwgTfbsBroadHela3Ezh239875UniPk			21506	371
	POL2B	wgEncodeAwgTfbsBroadHela3Pol2bUniPk			21506	602
	GABP	wgEncodeAwgTfbsHaibHela3GabpPcr1xUniPk			21506	1328
	CEBPB	wgEncodeAwgTfbsSydhHela3CebpblgggrabUniPk			21506	11930
	FOS	wgEncodeAwgTfbsSydhHela3CfosUniPk			21506	1808
	JUND	wgEncodeAwgTfbsSydhHela3CjunIgggrabUniPk			21506	4249
	HAE2F1	wgEncodeAwgTfbsSydhHela3Hae2f1UniPk			21506	2001
	JUND	wgEncodeAwgTfbsSydhHela3JundIgggrabUniPk			21506	6104
	MAX	wgEncodeAwgTfbsSydhHela3MaxIgggrabUniPk			21506	5752
	P300	wgEncodeAwgTfbsSydhHela3P300sc584sc584IgggrabUniPk			21506	5008
	STAT3	wgEncodeAwgTfbsSydhHela3Stat3IgggrabUniPk			21506	2737
	CTCF	wgEncodeAwgTfbsUtaHela3CtcfUniPk			11343	41890
Hepg2	CTCF	wgEncodeAwgTfbsBroadHepg2CtcfUniPk	35857	35857	9007	96433
	EZH2	wgEncodeAwgTfbsBroadHepg2Ezh239875UniPk			9007	654
	CEBPB	wgEncodeAwgTfbsHaibHepg2Cebpbsc150V0416101UniPk			9007	3564
	ELF1	wgEncodeAwgTfbsHaibHepg2Elf1sc631V0416101UniPk			9007	3465
	FOS	wgEncodeAwgTfbsHaibHepg2Fos12V0416101UniPk			9007	4900
	FOXA1	wgEncodeAwgTfbsHaibHepg2Foxa1sc101058V0416101UniPk			9007	8490
	FOXA1	wgEncodeAwgTfbsHaibHepg2Foxa1sc6553V0416101UniPk			9007	10008
	GABP	wgEncodeAwgTfbsHaibHepg2GabpPcr2xUniPk			9007	1948
	HDAC	wgEncodeAwgTfbsHaibHepg2Hdac2sc6296V0416101UniPk			9007	3740
	JUND	wgEncodeAwgTfbsHaibHepg2JundPcr1xUniPk			9007	4244
	P300	wgEncodeAwgTfbsHaibHepg2P300V0416101UniPk			9007	5439
	Sin3A	wgEncodeAwgTfbsHaibHepg2Sin3ak20Pcr1xUniPk			9007	3275
	SP1	wgEncodeAwgTfbsHaibHepg2Sp1Pcr1xUniPk			9007	5079
	SP2	wgEncodeAwgTfbsHaibHepg2Sp2V0422111UniPk			9007	510
	SRF	wgEncodeAwgTfbsHaibHepg2SrfV0416101UniPk			9007	1030
	TAF1	wgEncodeAwgTfbsHaibHepg2Taf1Pcr2xUniPk			9007	3154
	TEAD4	wgEncodeAwgTfbsHaibHepg2Tead4sc101184V0422111UniPk			9007	2975
	YY1	wgEncodeAwgTfbsHaibHepg2Yy1sc281V0416101UniPk			9007	3400
	CEBPB	wgEncodeAwgTfbsSydhHepg2CebpbforskUniPk			9007	3638
	CEBPB	wgEncodeAwgTfbsSydhHepg2CebpblgggrabUniPk			9007	11044
	JUN	wgEncodeAwgTfbsSydhHepg2CjunIgggrabUniPk			9007	2522
	CoREST	wgEncodeAwgTfbsSydhHepg2Corestsc30189IgggrabUniPk			9007	1051
	JUND	wgEncodeAwgTfbsSydhHepg2JundIgggrabUniPk			9007	6351
	MAX	wgEncodeAwgTfbsSydhHepg2MaxIgggrabUniPk			9007	2352
	TBPI	wgEncodeAwgTfbsSydhHepg2TbplgggrabUniPk			9007	2726
	MYC	wgEncodeAwgTfbsUtaHepg2CmycUniPk			9007	874
K562	CTCF	wgEncodeAwgTfbsBroadK562CtcfUniPk	82297	82297	10219	102946
	EZH2	wgEncodeAwgTfbsBroadK562Ezh239875UniPk			21100	312
	HDAC	wgEncodeAwgTfbsBroadK562Hdac2a300705aUniPk			21100	1053
	HDAC	wgEncodeAwgTfbsBroadK562Hdac6a30134aUniPk			21100	228
	CEBPB	wgEncodeAwgTfbsHaibK562Cebpbsc150V0422111UniPk			21100	4364
	ELF1	wgEncodeAwgTfbsHaibK562Elf1sc631V0416102UniPk			21100	5340
	FOS	wgEncodeAwgTfbsHaibK562Fos1sc183V0416101UniPk			21100	2199
	GABP	wgEncodeAwgTfbsHaibK562GabpV0416101UniPk			21100	2801
	GATA2	wgEncodeAwgTfbsHaibK562Gata2sc267Pcr1xUniPk			21100	3721
	HDAC	wgEncodeAwgTfbsHaibK562Hdac2sc6296V0416102UniPk			21100	1299
	MAX	wgEncodeAwgTfbsHaibK562MaxV0416102UniPk			21100	8977
	Sin3A	wgEncodeAwgTfbsHaibK562Sin3ak20V0416101UniPk			21100	2514
	SRF	wgEncodeAwgTfbsHaibK562SrfV0416101UniPk			21100	909
	TAF1	wgEncodeAwgTfbsHaibK562Taf1V0416101UniPk			21100	2917
	TEAD4	wgEncodeAwgTfbsHaibK562Tead4sc101184V0422111UniPk			21100	6052
	YY1	wgEncodeAwgTfbsHaibK562Yy1V0416101UniPk			21100	2421
	YY1	wgEncodeAwgTfbsHaibK562Yy1V0416102UniPk			21100	4712
	CEBPB	wgEncodeAwgTfbsSydhK562CebpblgggrabUniPk			21100	7491
	FOS	wgEncodeAwgTfbsSydhK562CfosUniPk			21100	1495
	JUN	wgEncodeAwgTfbsSydhK562CjunUniPk			21100	1875
	CoREST	wgEncodeAwgTfbsSydhK562Corestsc30189IgggrabUniPk			21100	7023
	GATA2	wgEncodeAwgTfbsSydhK562Gata2UcdUniPk			21100	2083
	JUND	wgEncodeAwgTfbsSydhK562JundIgggrabUniPk			21100	7830
	MAX	wgEncodeAwgTfbsSydhK562MaxIgggrabUniPk			21100	6159
	P300	wgEncodeAwgTfbsSydhK562P300IgggrabUniPk			21100	5030
	TBPI	wgEncodeAwgTfbsSydhK562TbplggmusUniPk			21100	3437
	YY1	wgEncodeAwgTfbsSydhK562Yy1UcdUniPk			21100	962
	FOS	wgEncodeAwgTfbsUchicagoK562EfosUniPk			21100	2011
	GATA2	wgEncodeAwgTfbsUchicagoK562Egata2UniPk			21100	2245
	HDAC	wgEncodeAwgTfbsUchicagoK562Ehdac8UniPk			21100	333
	JUND	wgEncodeAwgTfbsUchicagoK562EjundUniPk			21100	5153
	CTCF	wgEncodeAwgTfbsUtaK562CtcfUniPk			10881	102946

Table S8: Cross-cell line and Traditional validations

Cell Line (Train)	Cell Line (Test)	Datasets	ROC-AUC
	Gm12878	wgEncodeAwgTfbsBroadGm12878CtcfUniPk	0.911771
		wgEncodeAwgTfbsHaibGm12878Elf1sc631V0416101UniPk	0.923297835
		wgEncodeAwgTfbsHaibGm12878GabpPcr2xUniPk	0.972026425
		wgEncodeAwgTfbsHaibGm12878P300Pcr1xUniPk	0.961545303
		wgEncodeAwgTfbsHaibGm12878Pax5c20Pcr1xUniPk	0.910244685
		wgEncodeAwgTfbsHaibGm12878Pax5n19Pcr1xUniPk	0.954225695
		wgEncodeAwgTfbsHaibGm12878Taf1Pcr1xUniPk	0.963607915
		wgEncodeAwgTfbsHaibGm12878Yy1sc281Pcr1xUniPk	0.782003075
		wgEncodeAwgTfbsSydhGm12878CfosUniPk	0.983201389
		wgEncodeAwgTfbsSydhGm12878JundUniPk	0.977434385
		wgEncodeAwgTfbsSydhGm12878MaxIggnusUniPk	0.93539378
		wgEncodeAwgTfbsSydhGm12878NfkbTnfaIggrabUniPk	0.963004202
		wgEncodeAwgTfbsSydhGm12878P300bUniPk	0.977116949
		wgEncodeAwgTfbsSydhGm12878Stat3IggnusUniPk	0.949901685
		wgEncodeAwgTfbsSydhGm12878TbpIggnusUniPk	0.955128372
		wgEncodeAwgTfbsUtaGm12878CmycUniPk	0.953483661
		wgEncodeAwgTfbsUtaGm12878CtcfUniPk	0.931330686
	Helas3	wgEncodeAwgTfbsBroadHelas3CtcfUniPk	0.927136522
		wgEncodeAwgTfbsBroadHelas3Ezh239875UniPk	0.95801178
		wgEncodeAwgTfbsBroadHelas3Pol2bUniPk	0.961375725
		wgEncodeAwgTfbsHaibHelas3GabpPcr1xUniPk	0.966674578
		wgEncodeAwgTfbsSydhHelas3CebpIggrabUniPk	0.929158634
		wgEncodeAwgTfbsSydhHelas3CfosUniPk	0.962639337
		wgEncodeAwgTfbsSydhHelas3CjunIggrabUniPk	0.96608006
		wgEncodeAwgTfbsSydhHelas3Hae2f1UniPk	0.943407191
		wgEncodeAwgTfbsSydhHelas3JundIggrabUniPk	0.93883863
		wgEncodeAwgTfbsSydhHelas3MaxIggrabUniPk	0.91162517
		wgEncodeAwgTfbsSydhHelas3P300sc584sc584IggrabUniPk	0.962226772
		wgEncodeAwgTfbsSydhHelas3Stat3IggrabUniPk	0.954934321
		wgEncodeAwgTfbsUtaHelas3CtcfUniPk	0.963028032
	Hepg2	wgEncodeAwgTfbsBroadHepg2CtcfUniPk	0.957989005
		wgEncodeAwgTfbsBroadHepg2Ezh239875UniPk	0.974249471
		wgEncodeAwgTfbsHaibHepg2Cebpssc150V0416101UniPk	0.963315585
		wgEncodeAwgTfbsHaibHepg2Elf1sc631V0416101UniPk	0.935625506
		wgEncodeAwgTfbsHaibHepg2Fosl2V0416101UniPk	0.959788226
		wgEncodeAwgTfbsHaibHepg2Foxa1sc101058V0416101UniPk	0.957856257
		wgEncodeAwgTfbsHaibHepg2Foxa1sc6553V0416101UniPk	0.959990318
		wgEncodeAwgTfbsHaibHepg2GabpPcr2xUniPk	0.96199924
		wgEncodeAwgTfbsHaibHepg2Hdac2sc6296V0416101UniPk	0.945765207
		wgEncodeAwgTfbsHaibHepg2JundPcr1xUniPk	0.967180032
		wgEncodeAwgTfbsHaibHepg2P300V0416101UniPk	0.968381725
		wgEncodeAwgTfbsHaibHepg2Sin3ak20Pcr1xUniPk	0.961535803

		wgEncodeAwgTfbsHaibHepg2Sp1Pcr1xUniPk	0.973896274
		wgEncodeAwgTfbsHaibHepg2Sp2V0422111UniPk	0.956255592
		wgEncodeAwgTfbsHaibHepg2SrfV0416101UniPk	0.951984217
		wgEncodeAwgTfbsHaibHepg2Taf1Pcr2xUniPk	0.966137308
		wgEncodeAwgTfbsHaibHepg2Tead4sc101184V0422111UniPk	0.948019757
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		wgEncodeAwgTfbsSydhHepg2MaxIggrabUniPk	0.955545182
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		wgEncodeAwgTfbsSydhHelas3JundIggrabUniPk	0.949568891
		wgEncodeAwgTfbsSydhHelas3MaxIggrabUniPk	0.918758962
		wgEncodeAwgTfbsSydhHelas3P300sc584sc584IggrabUniPk	0.975139349
		wgEncodeAwgTfbsSydhHelas3Stat3IggrabUniPk	0.964390094
		wgEncodeAwgTfbsUtaHelas3CtcfUniPk	0.968178681
	Hepg2	wgEncodeAwgTfbsBroadHepg2CtcfUniPk	0.96214839
		wgEncodeAwgTfbsBroadHepg2Ezh239875UniPk	0.969958551
		wgEncodeAwgTfbsHaibHepg2Cebppsc150V0416101UniPk	0.970650571
		wgEncodeAwgTfbsHaibHepg2Elf1sc631V0416101UniPk	0.935071311
		wgEncodeAwgTfbsHaibHepg2Fosl2V0416101UniPk	0.966733221
		wgEncodeAwgTfbsHaibHepg2Foxa1sc101058V0416101UniPk	0.959654381
		wgEncodeAwgTfbsHaibHepg2Foxa1sc6553V0416101UniPk	0.960973033
		wgEncodeAwgTfbsHaibHepg2GabpPcr2xUniPk	0.959416632
		wgEncodeAwgTfbsHaibHepg2Hdac2sc6296V0416101UniPk	0.950598688
		wgEncodeAwgTfbsHaibHepg2JundPcr1xUniPk	0.97458225
		wgEncodeAwgTfbsHaibHepg2P300V0416101UniPk	0.969677391
		wgEncodeAwgTfbsHaibHepg2Sin3ak20Pcr1xUniPk	0.962562146
		wgEncodeAwgTfbsHaibHepg2Sp1Pcr1xUniPk	0.973848565
		wgEncodeAwgTfbsHaibHepg2Sp2V0422111UniPk	0.953185213
		wgEncodeAwgTfbsHaibHepg2SrfV0416101UniPk	0.954615342
		wgEncodeAwgTfbsHaibHepg2Taf1Pcr2xUniPk	0.968855214
		wgEncodeAwgTfbsHaibHepg2Tead4sc101184V0422111UniPk	0.948697381
		wgEncodeAwgTfbsHaibHepg2Yy1sc281V0416101UniPk	0.898530849

		wgEncodeAwgTfbsSydhHepg2CebpbforsklnUniPk	0.956305486
		wgEncodeAwgTfbsSydhHepg2CebpbiggrabUniPk	0.977186659
		wgEncodeAwgTfbsSydhHepg2CjuniggrabUniPk	0.985076019
		wgEncodeAwgTfbsSydhHepg2Corestsc30189IggrabUniPk	0.911458495
		wgEncodeAwgTfbsSydhHepg2JundIggrabUniPk	0.977242188
		wgEncodeAwgTfbsSydhHepg2MaxIggrabUniPk	0.957412399
		wgEncodeAwgTfbsSydhHepg2TbpIggrabUniPk	0.965390557
		wgEncodeAwgTfbsUtaHepg2CmycUniPk	0.930191151
	K562	wgEncodeAwgTfbsBroadK562CtcfUniPk	0.910607102
		wgEncodeAwgTfbsBroadK562Ezh239875UniPk	0.950974526
		wgEncodeAwgTfbsBroadK562Hdac2a300705aUniPk	0.943678454
		wgEncodeAwgTfbsBroadK562Hdac6a301341aUniPk	0.942981209
		wgEncodeAwgTfbsHaibK562Cebpbsc150V0422111UniPk	0.946261533
		wgEncodeAwgTfbsHaibK562Elf1sc631V0416102UniPk	0.908030668
		wgEncodeAwgTfbsHaibK562Fosl1sc183V0416101UniPk	0.965098526
		wgEncodeAwgTfbsHaibK562GabpV0416101UniPk	0.93955648
		wgEncodeAwgTfbsHaibK562Gata2sc267Pcr1xUniPk	0.964074995
		wgEncodeAwgTfbsHaibK562Hdac2sc6296V0416102UniPk	0.917381781
		wgEncodeAwgTfbsHaibK562MaxV0416102UniPk	0.895002492
		wgEncodeAwgTfbsHaibK562Sin3ak20V0416101UniPk	0.942763397
		wgEncodeAwgTfbsHaibK562SrfV0416101UniPk	0.941003655
		wgEncodeAwgTfbsHaibK562Taf1V0416101UniPk	0.954246905
		wgEncodeAwgTfbsHaibK562Tead4sc101184V0422111UniPk	0.932029136
		wgEncodeAwgTfbsHaibK562Yy1V0416101UniPk	0.883531765
		wgEncodeAwgTfbsHaibK562Yy1V0416102UniPk	0.903553874
		wgEncodeAwgTfbsSydhK562CebpbiggrabUniPk	0.951038921
		wgEncodeAwgTfbsSydhK562CfosUniPk	0.978965683
		wgEncodeAwgTfbsSydhK562CjunUniPk	0.966240708
		wgEncodeAwgTfbsSydhK562Corestsc30189IggrabUniPk	0.883680632
		wgEncodeAwgTfbsSydhK562Gata2UcdUniPk	0.959012339
		wgEncodeAwgTfbsSydhK562JundIggrabUniPk	0.903160142
		wgEncodeAwgTfbsSydhK562MaxIggrabUniPk	0.899514085
		wgEncodeAwgTfbsSydhK562P300IggrabUniPk	0.946992274
		wgEncodeAwgTfbsSydhK562TbpIggmusUniPk	0.94320978
		wgEncodeAwgTfbsSydhK562Yy1UcdUniPk	0.958440207
		wgEncodeAwgTfbsUchicagoK562EfosUniPk	0.971645028
		wgEncodeAwgTfbsUchicagoK562Egata2UniPk	0.962392911
		wgEncodeAwgTfbsUchicagoK562Ehdac8UniPk	0.909394916
		wgEncodeAwgTfbsUchicagoK562EjundUniPk	0.946200515
		wgEncodeAwgTfbsUtaK562CtcfUniPk	0.946896781

Table S9: Prediction comparison of TFBS-Finder with the state-of-the-art predictors on 165 ChIP-seq datasets

TFs	Datasets	TFBS-Finder			BERT-TFBS			DeepBind			DanQ			DLBSS			CRPTS			D-SSCA			DSAC		
		Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC	Accuracy	PR-AUC	ROC-AUC
cebpb	wgEncodeAwgTfbsHaibHepg2Cebpbsc150V0416101UniPk	0.955502527	0.987393007	0.985953277	0.925733539	0.977443323	0.977057894	0.903411484	0.965857	0.963637	0.90285	0.962157	0.959139	0.916047	0.970415	0.968525	0.907623	0.965592	0.963799	0.90299	0.965362	0.963861	0.909085	0.965551	0.965571
	wgEncodeAwgTfbsHaibK562Cebpbsc150V0422111UniPk	0.948089319	0.976658980	0.975587781	0.895936457	0.959448446	0.957432088	0.865431104	0.937684	0.932552	0.857488	0.94112	0.933315	0.882583	0.952168	0.946604	0.86428	0.93738	0.933759	0.86451	0.936249	0.932003			
	wgEncodeAwgTfbsSydhA549CebpbIlggrabUniPk	0.958519884	0.985929372	0.985550138	0.94324093	0.982469401	0.984178036	0.915914927	0.971065	0.970718	0.925133	0.975977	0.974723	0.931059	0.980597	0.979998	0.925463	0.974613	0.975266	0.925067	0.974745	0.975517			
	wgEncodeAwgTfbsSydhH1hescCebpbIlggrabUniPk	0.969281046	0.989643443	0.989628573	0.946878065	0.98529346	0.986226118	0.921379536	0.971211	0.97032	0.924158	0.971392	0.968767	0.935927	0.978587	0.978635	0.926447	0.973819	0.972429	0.926773	0.973029	0.973007			
	wgEncodeAwgTfbsSydhHela3CebpbIlggrabUniPk	0.950092733	0.974555243	0.973618386	0.906423875	0.960849273	0.962815576	0.857696847	0.933546	0.930057	0.862038	0.939015	0.933612	0.86482	0.949183	0.946389	0.860142	0.938482	0.936603	0.868488	0.940686	0.939356			
	wgEncodeAwgTfbsSydhHepg2CebpbForskUniPk	0.956725469	0.982966261	0.981204334	0.916184174	0.973219955	0.971520238	0.868899917	0.94121	0.937184	0.882685	0.951396	0.94564	0.891922	0.962445	0.959188	0.884753	0.950003	0.946234	0.872071	0.950437	0.948396			
	wgEncodeAwgTfbsSydhHepg2CebpbIlggrabUniPk	0.977737882	0.991733052	0.992218217	0.951703398	0.978532554	0.985223841	0.926792046	0.972939	0.975878	0.931954	0.979728	0.98131	0.942637	0.982849	0.983957	0.931819	0.975761	0.979011	0.930248	0.973792	0.97696			
	wgEncodeAwgTfbsSydhlmr90CebpbIlggrabUniPk	0.965072189	0.983861001	0.984728320	0.931055855	0.971653831	0.976487763	0.900977104	0.95959	0.961092	0.904732	0.965711	0.964932	0.910748	0.971594	0.97183	0.901779	0.960427	0.961879	0.904222	0.962063	0.963924			
corest	wgEncodeAwgTfbsSydhK562CebpbIlggrabUniPk	0.966498941	0.986239181	0.985852825	0.941472458	0.979551751	0.981731929	0.908567267	0.964928	0.965457	0.911149	0.971564	0.969314	0.918101	0.974934	0.973813	0.915188	0.970086	0.969313	0.916314	0.966325	0.966381	0.755452	0.839527	0.835733
	wgEncodeAwgTfbsSydhHepg2Corestsc30189IlggrabUniPk	0.924953096	0.952242292	0.956647165	0.778769375	0.866414595	0.857508266	0.635979333	0.675565	0.689056	0.61954	0.65936	0.678559	0.66698	0.717678	0.72603	0.639737	0.70339	0.705367	0.674495	0.746852	0.735529			
ctcf	wgEncodeAwgTfbsBroadDnd41CtcfUniPk	0.968943459	0.987497811	0.985760307	0.925604912	0.977076661	0.975697602	0.908528092	0.970118	0.965868	0.914822	0.973603	0.967764	0.917608	0.976688	0.973155	0.897126	0.964531	0.960522	0.900738	0.967042	0.963326	0.908346	0.969759	0.966753
	wgEncodeAwgTfbsBroadGm12878CtcfUniPk	0.961461343	0.983785257	0.980505972	0.91733948	0.972521345	0.970700758	0.903565874	0.966214	0.958244	0.887148	0.957533	0.946912	0.900743	0.968647	0.961081	0.895386	0.961176	0.954172	0.895847	0.962171	0.954828			
	wgEncodeAwgTfbsBroadH1hescCtcfUniPk	0.969607691	0.987680252	0.987076075	0.920369078	0.963105715	0.970094814	0.902768086	0.965056	0.961798	0.907692	0.96974	0.965553	0.903427	0.974258	0.972511	0.894976	0.961062	0.958529	0.900675	0.965032	0.96189			
	wgEncodeAwgTfbsBroadHela3CtcfUniPk	0.955783656	0.979776008	0.975231846	0.9045551	0.95941659	0.95829178	0.877708138	0.954147	0.942763	0.880817	0.95351	0.94132	0.892464	0.960867	0.951607	0.863643	0.945741	0.935706	0.87302	0.952384	0.942021			
	wgEncodeAwgTfbsBroadHepg2CtcfUniPk	0.973788985	0.989657771	0.987782219	0.930206836	0.975849721	0.976886474	0.921579471	0.976034	0.972385	0.971755	0.97166	0.965121	0.921248	0.976584	0.97241	0.906979	0.968751	0.964343	0.910242	0.97055	0.966504			
	wgEncodeAwgTfbsBroadHmccCtcfUniPk	0.975472431	0.991430564	0.989451291	0.939162514	0.981947193	0.98090641	0.925053395	0.977957	0.97412	0.926607	0.978196	0.972041	0.929001	0.98129	0.977667	0.981721	0.972065	0.967678	0.91541	0.975013	0.970644			
	wgEncodeAwgTfbsBroadHsmtCtcfUniPk	0.969635628	0.987054608	0.985723483	0.924392713	0.968000427	0.971672959	0.905212551	0.969444	0.965507	0.920294	0.975238	0.970854	0.922672	0.977903	0.974848	0.895192	0.962853	0.958662	0.898178	0.966895	0.963555			
	wgEncodeAwgTfbsBroadHsmtCtcfUniPk	0.969092668	0.986114074	0.983489850	0.919255994	0.970014101	0.970613446	0.905924094	0.967782	0.962145	0.91001	0.967923	0.969043	0.907483	0.970832	0.965505	0.89614	0.9608	0.954873	0.899796	0.966086	0.961232			
	wgEncodeAwgTfbsBroadHuveCtcfUniPk	0.972053965	0.988369400	0.986245041	0.929849924	0.978231758	0.97622877	0.912777089	0.971053	0.965665	0.922002	0.975087	0.968994	0.925306	0.979839	0.975336	0.913259	0.971145	0.966052	0.912708	0.969878	0.965096			
	wgEncodeAwgTfbsBroadK562CtcfUniPk	0.953103242	0.976834832	0.971203987	0.89425516	0.957885105	0.954492403	0.877940811	0.951482	0.932882	0.868192	0.946107	0.931618	0.877742	0.953559	0.941702	0.866302	0.945922	0.932941	0.866352	0.946901	0.934551			
	wgEncodeAwgTfbsBroadNhaCtcfUniPk	0.973384285	0.988973697	0.986782911	0.933351214	0.977250157	0.976399959	0.917661258	0.974367	0.969005	0.919874	0.973886	0.967265	0.928389	0.979682	0.975596	0.910152	0.97074	0.966125	0.915113	0.97236	0.966897			
	wgEncodeAwgTfbsBroadNhdadCtcfUniPk	0.971894115	0.988161987	0.987115533	0.930021621	0.977345998	0.977562455	0.910404472	0.971529	0.967442	0.920371	0.973321	0.968838	0.924274	0.979546	0.976509	0.890735	0.960934	0.956153	0.90761	0.96918	0.965445			
	wgEncodeAwgTfbsBroadNhekCtcfUniPk	0.963760965	0.984197430	0.981539612	0.913865892	0.96847131	0.968615962	0.89204452	0.959988	0.952794	0.90449	0.965944	0.95806	0.910631	0.970135	0.96391	0.890838	0.959886	0.953397	0.891167	0.960731	0.954981			
	wgEncodeAwgTfbsBroadNhlCtcfUniPk	0.967201356	0.987163042	0.984733360	0.918617542	0.970479912	0.970682508	0.911118357	0.971019	0.96499	0.902837	0.966919	0.957896	0.91001	0.974358	0.969146	0.89925	0.964857	0.958888	0.901402	0.967132	0.960697			
	wgEncodeAwgTfbsBroadOsteobCtcfUniPk	0.956870938	0.981178629	0.976694321	0.906723001	0.962020598	0.961251479	0.887408302	0.958981	0.947745	0.891123	0.958916	0.947277	0.89103	0.962246	0.951915	0.872087	0.950136	0.93857	0.883462	0.955801	0.946121			
	wgEncodeAwgTfbsUtaGm12878CtcfUniPk	0.977123491	0.991840014	0.991768410	0.933382758	0.976123674	0.978299721	0.925916119	0.978643	0.976644	0.931159	0.981746	0.979427	0.931794	0.983111	0.981454	0.91649	0.97362	0.971758	0.923215	0.97744	0.976106			
	wgEncodeAwgTfbsUtaH1hescCtcfUniPk	0.970125414	0.988094016	0.988092651	0.919413052	0.972457616	0.973036049	0.900952606	0.966341	0.964168	0.911189	0.971054	0.968227	0.909177	0.972064	0.970228	0.888705	0.957453	0.954728	0.883794	0.958917	0.956666			
	wgEncodeAwgTfbsUtaHela3CtcfUniPk	0.979845098	0.992050928	0.992549324	0.937766824	0.974368905	0.979761229	0.915408653	0.973686	0.972549	0.939527	0.984326	0.983539	0.933762	0.983156	0.982495	0.907134	0.969766	0.968834	0.91893	0.975892	0.975045			
	wgEncodeAwgTfbsUtaK562CtcfUniPk	0.978667527	0.992386038	0.992031219	0.938346696	0.978712361	0.981014274	0.925859368	0.980475	0.979261	0.937287	0.983783	0.982081	0.92245	0.984884	0.983733	0.902774	0.967422	0.965367	0.906875	0.96814	0.96748			
	wgEncodeAwgTfbsUtaMc7CtcfUniPk	0.963226150	0.983464163	0.982502335	0.905832186	0.961933176	0.965184947	0.880609293	0.952881	0.94872	0.890641	0.958107	0.953348	0.884822	0.962654	0.960133	0.873362	0.947185	0.944352	0.88571	0.953964	0.950606			
	hae2f1	wgEncodeAwgTfbsSydhHela3Hae2f1UniPk	0.901750000	0.947707693	0.951962327	0.827163582	0.909757712	0.908472154	0.737618809	0.813172	0.81754														

gabp	wgEncodeAwgTfbsHaibGm12878GabpPcr2xUniPk	0.929577465	0.966164090	0.961683851	0.860164512	0.926603683	0.919121271	0.804151978	0.898533	0.88183	0.794751	0.887479	0.868067	0.830787	0.918433	0.901089	0.817078	0.903678	0.890317	0.798668	0.896092	0.879238	0.811858	0.899919	0.89115
	wgEncodeAwgTfbsHaibH1hescGabpPcr1xUniPk	0.871657754	0.933606700	0.935322780	0.849241748	0.928350105	0.925469817	0.753345227	0.848793	0.832197	0.73372	0.815002	0.809285	0.772525	0.879492	0.867321	0.753791	0.84919	0.836525	0.755575	0.843427	0.832667			
	wgEncodeAwgTfbsHaibHelas3GabpPcr1xUniPk	0.938262195	0.965397353	0.965608964	0.872713415	0.945844793	0.940964669	0.832317073	0.91762	0.905937	0.814405	0.909011	0.893597	0.838415	0.933982	0.920224	0.839177	0.922076	0.910817	0.830412	0.916411	0.903335			
	wgEncodeAwgTfbsHaibHegp2GabpPcr2xUniPk	0.930244399	0.964287964	0.962610836	0.864816701	0.925717169	0.922174647	0.793533605	0.873421	0.864568	0.775204	0.864443	0.845968	0.803208	0.893867	0.884169	0.803462	0.891372	0.885688	0.797908	0.88273	0.873565			
	wgEncodeAwgTfbsHaibK562GabpV0416101UniPk	0.934642857	0.962630104	0.961100048	0.863140968	0.929401827	0.932177873	0.802215473	0.88774	0.878163	0.772378	0.869164	0.854909	0.805967	0.908872	0.901147	0.810255	0.897427	0.887686	0.775951	0.876284	0.867904			
gata2	wgEncodeAwgTfbsHaibK562Gata2sc267Pcr1xUniPk	0.950824030	0.975902414	0.975303306	0.891769711	0.956449393	0.956611232	0.8494881	0.925511	0.925525	0.844834	0.923269	0.921048	0.867039	0.941577	0.94134	0.848291	0.921385	0.922493	0.851615	0.926803	0.927317	0.815832	0.899001	0.89395
	wgEncodeAwgTfbsSydhHuvecGata2UcdUniPk	0.926443028	0.952802621	0.952943369	0.845187892	0.919897488	0.918564511	0.789991566	0.883368	0.874306	0.775373	0.86906	0.859203	0.783994	0.898606	0.889912	0.801799	0.892774	0.885903	0.777809	0.87168	0.865595			
	wgEncodeAwgTfbsSydhK562Gata2UcdUniPk	0.947166186	0.972152507	0.971558025	0.860196973	0.938788705	0.941317188	0.834013932	0.907356	0.906769	0.837617	0.912527	0.910006	0.846505	0.930601	0.928707	0.841701	0.912245	0.908882	0.836656	0.914959	0.909439			
	wgEncodeAwgTfbsSydhShsy5yGata2UcdUniPk	0.932708810	0.955778280	0.954359500	0.844751144	0.92089794	0.92380541	0.792763158	0.877681	0.872118	0.793764	0.88335	0.877667	0.834025	0.918605	0.913023	0.802489	0.884826	0.881694	0.80349	0.890581	0.88756			
	wgEncodeAwgTfbsUchicagoK562Egata2UniPk	0.910523979	0.947419094	0.944200476	0.830864949	0.88289706	0.880354512	0.741892492	0.823429	0.808609	0.720791	0.810515	0.790833	0.753443	0.843937	0.83397	0.755664	0.838874	0.827259	0.743892	0.83175	0.82245			
gata3	wgEncodeAwgTfbsHaibT47dGata3sc268V0416102Dm002p1hUniPk	0.922338090	0.948880228	0.947442869	0.834362563	0.920463917	0.919172485	0.759640456	0.846438	0.841667	0.771099	0.858392	0.851559	0.797242	0.889071	0.883689	0.759572	0.843569	0.839932	0.765473	0.850925	0.846988	0.772668	0.853293	0.85090
	wgEncodeAwgTfbsSydhMcfr7Gata3UcdUniPk	0.922333333	0.957052866	0.959752083	0.776804339	0.872642135	0.864634691	0.665415102	0.734453	0.739815	0.648728	0.692934	0.700496	0.697539	0.779063	0.782048	0.700042	0.764643	0.767829	0.696704	0.773029	0.776349			
	wgEncodeAwgTfbsSydhShsy5yGata3sc269sc269UcdUniPk	0.920032051	0.956137211	0.953719849	0.821577429	0.907884772	0.903230285	0.75184354	0.839662	0.831737	0.742065	0.848815	0.840345	0.761622	0.88959	0.880113	0.77605	0.858211	0.857207	0.757454	0.853861	0.850196			
jun	wgEncodeAwgTfbsSydhHelas3CjunlgrgrabUniPk	0.949671516	0.972760666	0.970783644	0.888184911	0.958243057	0.954618076	0.864132348	0.937846	0.93187	0.855567	0.934376	0.925282	0.875513	0.947104	0.941295	0.864484	0.93856	0.931888	0.865658	0.940337	0.934075	0.899448	0.96076	0.95754
	wgEncodeAwgTfbsSydhHegp2CjunlgrgrabUniPk	0.962889066	0.985839286	0.982198341	0.924351297	0.977107654	0.974108632	0.899600798	0.964525	0.959246	0.892814	0.961096	0.952935	0.913174	0.971832	0.966546	0.911776	0.972517	0.968082	0.899002	0.965988	0.96022			
	wgEncodeAwgTfbsSydhHuvecCjunUniPk	0.956468956	0.983736730	0.982780969	0.922043011	0.973364784	0.974036553	0.895750201	0.9606	0.957514	0.894988	0.958895	0.954562	0.907128	0.971223	0.96949	0.897763	0.959869	0.959096	0.896722	0.961897	0.959596			
	wgEncodeAwgTfbsSydhK562CjunUniPk	0.955015512	0.977371121	0.976042496	0.922341749	0.972090938	0.971903432	0.88696327	0.949207	0.946758	0.888515	0.9509	0.946559	0.907656	0.962959	0.959793	0.899638	0.95518	0.954216	0.890067	0.953198	0.94849			
	wgEncodeAwgTfbsHaibHegp2CjundPcr1xUniPk	0.939550141	0.970267557	0.965753801	0.866574991	0.943006074	0.938747224	0.793814433	0.892538	0.876828	0.781865	0.891917	0.879608	0.805881	0.905133	0.892226	0.851136	0.908402	0.898121	0.799203	0.901589	0.889531			
jund	wgEncodeAwgTfbsSydhGm12878JundUniPk	0.938524590	0.970917548	0.976423997	0.853182752	0.927301001	0.93088817	0.832648871	0.913069	0.9123	0.834702	0.9063	0.904287	0.471253	0.53823	0.577742	0.836756	0.90868	0.912562	0.829569	0.909207	0.909715	0.861518	0.934126	0.93013
	wgEncodeAwgTfbsSydhH1hescJundlgrgrabUniPk	0.931576145	0.961444237	0.960435997	0.874567244	0.94654058	0.939946092	0.803462051	0.901487	0.887518	0.805593	0.900085	0.878872	0.812783	0.908579	0.892041	0.800533	0.901373	0.887266	0.804527	0.898538	0.885988			
	wgEncodeAwgTfbsSydhHelas3JundlgrgrabUniPk	0.958875163	0.979700207	0.976706462	0.919039073	0.970406644	0.968686136	0.876107634	0.950192	0.943762	0.872124	0.950762	0.941995	0.882936	0.958744	0.953015	0.882042	0.952257	0.946116	0.874644	0.950887	0.94513			
	wgEncodeAwgTfbsSydhHegp2JundlgrgrabUniPk	0.969899937	0.988069700	0.985361680	0.95876701	0.984095216	0.9812106918	0.696007	0.964564	0.921069	0.937449	0.968808	0.930346	0.978088	0.974797	0.912421	0.968887	0.964869	0.925551	0.97514	0.972585				
	wgEncodeAwgTfbsSydhK562JundlgrgrabUniPk	0.949209788	0.972671043	0.970416542	0.891580088	0.956115607	0.9548048	0.813436165	0.902091	0.893372	0.818726	0.914476	0.902829	0.829307	0.919187	0.909409	0.820065	0.910064	0.899757	0.831602	0.920114	0.91251			
max	wgEncodeAwgTfbsUchicagoK562EjundUniPk	0.933741861	0.965570726	0.960858640	0.872067414	0.943463833	0.938961814	0.807526573	0.897898	0.882891	0.796897	0.891868	0.878048	0.82505	0.916446	0.904876	0.8149	0.904304	0.890456	0.80475	0.900441	0.887962	0.797398	0.883264	0.87846
	wgEncodeAwgTfbsHaibK562MaxV0416102UniPk	0.926879271	0.951937826	0.948597368	0.847133584	0.920159352	0.920316744	0.762685802	0.863445	0.851146	0.755966	0.861045	0.846959	0.783815	0.882742	0.870423	0.763597	0.867091	0.853247	0.784669	0.87732	0.867553			
	wgEncodeAwgTfbsSydhGm12878MaxlgrgmsUniPk	0.910778275	0.944669538	0.944293128	0.802916751	0.887173598	0.885253853	0.703463642	0.791818	0.775894	0.6905	0.767962	0.757456	0.723516	0.815984	0.802072	0.726555	0.810846	0.798963	0.728783	0.807474	0.800184			
	wgEncodeAwgTfbsSydhH1hescMaxUcdUniPk	0.944899818	0.967637387	0.969034155	0.857142857	0.936513874	0.931214165	0.795169745	0.888495	0.875626	0.804056	0.895101	0.876502	0.820916	0.916993	0.904479	0.808157	0.900376	0.888728	0.802005	0.902764	0.89031			
	wgEncodeAwgTfbsSydhHelas3MaxlgrgrabUniPk	0.915887850	0.939198882	0.941591117	0.824634294	0.87776633	0.891505745	0.733316022	0.817058	0.810543	0.736865	0.822043	0.816653	0.758591	0.849437	0.840265	0.750108	0.842719	0.835057	0.763178	0.848264	0.842856			
	wgEncodeAwgTfbsSydhHegp2MaxlgrgrabUniPk	0.920783646	0.952201943	0.951302439	0.833617384	0.913162034	0.911956574	0.738176395	0.837836	0.821677	0.740307	0.839489	0.822814	0.768854	0.873106	0.859568	0.75735	0.855806	0.843612	0.757989	0.853141	0.839139			
	wgEncodeAwgTfbsSydhHuvecMaxUniPk	0.929522752	0.968975224	0.968849473	0.865389953	0.952211284	0.95147616	0.815986678	0.899045	0.891534	0.816264	0.9066224	0.897229	0.835415	0.920642	0.912766	0.829586	0.917218	0.911272	0.825					

	wgEncodeAwgTfbsHaibK562Taf1V0416101UniPk	0.897952218	0.943234905	0.942443306	0.80863776	0.891367806	0.888035024	0.714066234	0.796569	0.789785	0.701605	0.7803	0.774341	0.728064	0.823473	0.81616	0.730966	0.804422	0.807314	0.721577	0.804226	0.799086			
	wgEncodeAwgTfbsHaibK562Taf1V0416101UniPk	0.919780829	0.939001105	0.944282411	0.80449069	0.894010857	0.890509728	0.712851406	0.783663	0.782143	0.706645	0.783948	0.788264	0.748813	0.833498	0.831823	0.731289	0.805182	0.810939	0.730376	0.809972	0.812964			
tbpi	wgEncodeAwgTfbsSydhGm12878TbpllgmsUniPk	0.883756868	0.917429597	0.922914289	0.794329897	0.873571172	0.868192817	0.679037801	0.744095	0.745395	0.680412	0.727694	0.739062	0.700344	0.77675	0.778895	0.697938	0.770529	0.767364	0.705326	0.7705	0.772821			
	wgEncodeAwgTfbsSydhHepg2TbpllgmsUniPk	0.851851852	0.911842038	0.913618065	0.800147221	0.883524751	0.877763814	0.663231505	0.721922	0.727534	0.668384	0.731542	0.72828	0.702245	0.786611	0.782828	0.689547	0.762481	0.761253	0.698013	0.767426	0.767655	0.726919	0.803419	0.80179
	wgEncodeAwgTfbsSydhK562TbpllgmsUniPk	0.872794118	0.922015627	0.926061582	0.810443177	0.901176922	0.891694535	0.68597338	0.759894	0.753417	0.669299	0.74848	0.74402	0.710692	0.794748	0.788851	0.711277	0.793344	0.783585	0.68729	0.778981	0.775586			
	wgEncodeAwgTfbsSydhH1HescCtbp2UcdUniPk	0.876169591	0.928687109	0.925347152	0.757478637	0.846364178	0.84315723	0.651352376	0.709954	0.71432	0.66453	0.706803	0.719404	0.686966	0.749609	0.753455	0.682692	0.745256	0.747613	0.690171	0.7603	0.768799			
thead4	wgEncodeAwgTfbsHaibH1HescTead4sc101184V0422111UniPk	0.926944729	0.970076408	0.96653946	0.911768472	0.964972462	0.965914819	0.87437572	0.941728	0.936936	0.871558	0.942751	0.93682	0.879242	0.952622	0.948676	0.870918	0.939465	0.936105	0.872839	0.944735	0.93978			
	wgEncodeAwgTfbsHaibHepg2Tead4sc101184V0422111UniPk	0.890415550	0.938321160	0.936591945	0.83065057	0.920997894	0.913605742	0.761904762	0.849417	0.840231	0.764085	0.850978	0.841215	0.780181	0.878142	0.8673	0.785379	0.872733	0.864712	0.780349	0.864681	0.860337	0.833114	0.913171	0.90994
	wgEncodeAwgTfbsHaibK562Tead4sc101184V0422111UniPk	0.899057540	0.946879022	0.944191757	0.859517116	0.927033491	0.930534876	0.774185547	0.867858	0.854578	0.778899	0.869237	0.857542	0.797089	0.892571	0.8856	0.799074	0.879475	0.875998	0.791963	0.881321	0.874403			
	wgEncodeAwgTfbsHaibGm12878Yy1sc281Pcr1xUniPk	0.903737542	0.949305852	0.944030902	0.866982386	0.93648354	0.933970184	0.795613161	0.895031	0.877764	0.801346	0.898192	0.878961	0.803672	0.90747	0.89294	0.812978	0.908284	0.894954	0.807328	0.900761	0.885497			
yy1	wgEncodeAwgTfbsHaibGm12892Yy1V0416101UniPk	0.898740310	0.947688631	0.945154965	0.860442578	0.937474906	0.932003765	0.808916169	0.896415	0.884328	0.802294	0.898138	0.882408	0.820061	0.912193	0.898046	0.804393	0.898102	0.886934	0.805201	0.898612	0.885235			
	wgEncodeAwgTfbsHaibH1HescYy1sc281V0416102UniPk	0.895228795	0.947177351	0.947199624	0.868024554	0.946959902	0.942081526	0.812779018	0.897603	0.885678	0.809849	0.898686	0.884021	0.811523	0.90677	0.898162	0.813477	0.90042	0.889203	0.816267	0.905194	0.895627			
	wgEncodeAwgTfbsHaibHct116Yy1sc281V0416101UniPk	0.896331738	0.941345127	0.938991475	0.850927958	0.934133584	0.928165114	0.736379964	0.831093	0.819441	0.739373	0.840733	0.823927	0.777689	0.876578	0.863144	0.756935	0.848923	0.841168	0.761126	0.856698	0.84317			
	wgEncodeAwgTfbsHaibHepg2Yy1sc281V0416101UniPk	0.885869565	0.927902056	0.928387117	0.83109075	0.910040831	0.910403366	0.752361867	0.83603	0.831728	0.74592	0.830171	0.821681	0.76138	0.849113	0.842161	0.755511	0.847531	0.8411	0.762811	0.851477	0.846778	0.82822	0.912525	0.90463
	wgEncodeAwgTfbsHaibK562Yy1V0416101UniPk	0.896712662	0.940172369	0.943311138	0.852092645	0.925621111	0.92837999	0.784030882	0.87249	0.86698	0.736692	0.855649	0.842786	0.788094	0.87748	0.869716	0.78139	0.871426	0.862307	0.747664	0.857348	0.850839			
	wgEncodeAwgTfbsHaibK562Yy1V0416102UniPk	0.903730703	0.950386163	0.948015218	0.864972115	0.939850856	0.938105382	0.785821536	0.882377	0.870504	0.781424	0.8876	0.873961	0.80266	0.902083	0.891702	0.806521	0.898987	0.887168	0.797083	0.89188	0.880669			
	wgEncodeAwgTfbsHaibK562Yy1sc281V0416102UniPk	0.891852094	0.933600511	0.933329443	0.842122502	0.922469428	0.917851631	0.764821487	0.866497	0.852766	0.766132	0.865386	0.851548	0.779234	0.881003	0.868258	0.772191	0.863933	0.852695	0.760236	0.858404	0.848466			
	wgEncodeAwgTfbsSydhK562Yy1UcdUniPk	0.905857741	0.961748466	0.955364285	0.902617801	0.968769216	0.967550133	0.894240838	0.95628	0.949033	0.880628	0.942838	0.932675	0.892147	0.959515	0.950413	0.884293	0.950571	0.941623	0.849738	0.94291	0.930427			
	wgEncodeAwgTfbsSydhNct2d1Yy1UcdUniPk	0.901175214	0.958704727	0.954373306	0.891805035	0.95831724	0.950318876	0.853240493	0.941872	0.926834	0.843064	0.934675	0.913706	0.858061	0.948618	0.934293	0.837708	0.932512	0.915775	0.850562	0.936723	0.921172			
	nfkb	wgEncodeAwgTfbsSydhGm10847NfkbTnfalgggrabUniPk	0.927197802	0.952697345	0.958203955	0.81908166	0.90191236	0.896726326	0.741820181	0.841208	0.819613	0.734396	0.830079	0.809472	0.765741	0.869241	0.850481	0.750894	0.861752	0.841189	0.748419	0.855476	0.839084		
wgEncodeAwgTfbsSydhGm12878NfkbTnfalgggrabUniPk		0.923906531	0.954948111	0.955436435	0.834331935	0.912305492	0.911820213	0.765877771	0.861114	0.84888	0.744458	0.848141	0.833226	0.790144	0.886167	0.877662	0.768125	0.859725	0.848608	0.761983	0.864717	0.854309	0.791224	0.879786	0.87257
wgEncodeAwgTfbsSydhGm12891NfkbTnfalgggrabUniPk		0.926198934	0.955128937	0.949887228	0.843044946	0.920080387	0.920012718	0.765766566	0.859578	0.848441	0.75564	0.854748	0.841766	0.789217	0.891855	0.880466	0.777136	0.87026	0.858123	0.782377	0.875978	0.866224			
wgEncodeAwgTfbsSydhGm12892NfkbTnfalgggrabUniPk		0.923602484	0.956991688	0.958599730	0.829344109	0.917131766	0.908848314	0.742617345	0.837751	0.822032	0.725521	0.839555	0.820321	0.76562	0.878127	0.866651	0.766553	0.868693	0.85573	0.759714	0.847912	0.840907			
wgEncodeAwgTfbsSydhGm18526NfkbTnfalgggrabUniPk		0.923013245	0.945829298	0.962823678	0.817578773	0.898821244	0.888158257	0.745439469	0.856558	0.828479	0.716418	0.820673	0.794501	0.750415	0.858095	0.83862	0.735489	0.835103	0.809557	0.778607	0.871357	0.851584			
pax5	wgEncodeAwgTfbsSydhGm19099NfkbTnfalgggrabUniPk	0.937007874	0.966319256	0.966215594	0.845472241	0.921293047	0.918517172	0.774934383	0.874258	0.858914	0.770341	0.872623	0.852892	0.810696	0.901144	0.89049	0.785433	0.88703	0.874039	0.781496	0.882593	0.872471			
	wgEncodeAwgTfbsHaibGm12878Pax5c20Pcr1xUniPk	0.918004817	0.948947972	0.947612453	0.825820701	0.908647646	0.906510349	0.748418833	0.837016	0.830351	0.769501	0.859359	0.851324	0.758458	0.853321	0.848171	0.74862	0.831224	0.828451	0.755145	0.839089	0.838073			
	wgEncodeAwgTfbsHaibGm12878Pax5c19Pcr1xUniPk	0.924574523	0.947290544	0.946924907	0.822414238	0.903427651	0.905953009	0.742326541	0.826452	0.819147	0.733686	0.816209	0.812376	0.741811	0.843619	0.837431	0.742327	0.83055	0.821673	0.728785	0.8253	0.819279	0.780744	0.872871	0.86707
	wgEncodeAwgTfbsHaibGm12891Pax5c20V0416101UniPk	0.917467949	0.961743508	0.963620486	0.775100402	0.854834788	0.851853142	0.704417671	0.783783	0.783466	0.692369	0.768796	0.759094	0.696386	0.780379	0.764168	0.744578	0.827059	0.815316	0.708434	0.787593	0.783417			
	wgEncodeAwgTfbsHaibGm12892Pax5c20V0416101UniPk	0.894400786	0.941943317	0.941123513	0.792976424	0.881869456	0.877760364	0.666502947	0.769797	0.748264	0.701621	0.774267	0.76353	0.716356	0.801008	0.786012	0.710216	0.759598	0.784791	0.705305	0.7889	0.776273			
hdac	wgEncodeAwgTfbsBroadK562Hdac2a300705aUniPk	0.932729008	0.962936213	0.964709332	0.763358779	0.849863813	0.848817104	0.638835878	0.721901	0.697005	0.62834	0.692834	0.68363	0.65792	0.740239	0.743933	0.660305	0.721345	0.721264	0.677004	0.759356	0.75216			
	wgEncodeAwgTfbsBroadK562Hdac6a301341aUniPk	0.854910714	0.926086018	0.929138412	0.680898877	0.740701347	0.738479263	0.575280899	0.574748	0.592065	0.541573	0.572983	0.555865	0.48764	0.544736	0.542465	0.577528	0.608869	0.601019						

	wgEncodeAwgTfbsSydhK562CebpbIgggrabUniPk	0.966498941	0.986239181	0.985852825	0.949483581	0.984453423	0.990690085	0.943392479	0.984453423	0.984636645
corest	wgEncodeAwgTfbsSydhHepg2Corestsc30189IgggrabUniPk	0.924953096	0.952242292	0.956647165	0.841709723	0.930770613	0.936034504	0.813057774	0.900770613	0.893128551
	wgEncodeAwgTfbsSydhK562Corestsc30189IgggrabUniPk	0.934262948	0.961864221	0.95963605	0.891268768	0.954522799	0.964306508	0.867643919	0.944522799	0.940393017
	wgEncodeAwgTfbsBroadDm41C1ctfUniPk	0.968943459	0.987497811	0.985760307	0.960532425	0.98090779	0.992703429	0.927668576	0.98090779	0.97876145
ctcf	wgEncodeAwgTfbsBroadGm12878C1ctfUniPk	0.961463134	0.983785257	0.980505972	0.956391497	0.976872673	0.988354774	0.919811049	0.976872673	0.973049573
	wgEncodeAwgTfbsBroadH1thesC1ctfUniPk	0.969607691	0.987680252	0.987076075	0.964371559	0.9784591	0.993419577	0.923819493	0.9784554	0.976889285
	wgEncodeAwgTfbsBroadHelas3C1ctfUniPk	0.955783656	0.979776008	0.975231846	0.942950205	0.970167577	0.982909189	0.904900558	0.970167577	0.964875222
	wgEncodeAwgTfbsBroadHepg2C1ctfUniPk	0.973788985	0.989657771	0.987782219	0.968919367	0.982858293	0.993613611	0.934631125	0.982858293	0.980786698
	wgEncodeAwgTfbsBroadHmccC1ctfUniPk	0.975472431	0.991430564	0.989451291	0.974953077	0.985744546	0.995945602	0.939033072	0.985744546	0.983278153
	wgEncodeAwgTfbsBroadHsmmC1ctfUniPk	0.969635628	0.987054608	0.985723483	0.965738866	0.981469141	0.994030443	0.931325911	0.981469141	0.979804137
	wgEncodeAwgTfbsBroadHsmttC1ctfUniPk	0.969092668	0.986114074	0.98348985	0.959359209	0.988347028	0.990837169	0.925491883	0.978347028	0.976644057
	wgEncodeAwgTfbsBroadHuvecC1ctfUniPk	0.972053965	0.98834694	0.986245041	0.969571802	0.980069315	0.993796103	0.929092661	0.980069315	0.977602314
	wgEncodeAwgTfbsBroadK562C1ctfUniPk	0.953103242	0.976834832	0.971203987	0.932504352	0.965546987	0.9782597	0.896841582	0.965546987	0.95807257
	wgEncodeAwgTfbsBroadNhaC1ctfUniPk	0.973384285	0.988973697	0.986782911	0.969692906	0.983512464	0.994218483	0.934826338	0.983512464	0.986884206
	wgEncodeAwgTfbsBroadNhdadC1ctfUniPk	0.971894115	0.988161987	0.987115533	0.967252017	0.98174341	0.994391155	0.928386859	0.98174341	0.979725118
	wgEncodeAwgTfbsBroadNhekC1ctfUniPk	0.963760965	0.98419743	0.981539612	0.951477603	0.977299928	0.989586513	0.920774165	0.977299928	0.974071565
	wgEncodeAwgTfbsBroadNhiC1ctfUniPk	0.967201356	0.987163042	0.98473336	0.960939028	0.989223908	0.991767002	0.921291164	0.979223908	0.976267556
	wgEncodeAwgTfbsBroadNhteobC1ctfUniPk	0.956870938	0.981178629	0.976694321	0.945630978	0.972304661	0.984890067	0.911226669	0.984890067	0.966641027
	wgEncodeAwgTfbsUtaGm12878C1ctfUniPk	0.977123491	0.991840014	0.99176841	0.973204829	0.987436376	0.996894215	0.942332133	0.987436376	0.98642521
	wgEncodeAwgTfbsUtaH1thesC1ctfUniPk	0.970125414	0.988094016	0.988092651	0.969114254	0.987832303	0.995322555	0.924974854	0.977832303	0.977365568
	wgEncodeAwgTfbsUtaHelas3C1ctfUniPk	0.979845098	0.992050928	0.992549324	0.975441222	0.986966138	0.997440521	0.943708464	0.986966138	0.986507813
	wgEncodeAwgTfbsUtaK562C1ctfUniPk	0.978667527	0.992386038	0.992031219	0.975670445	0.986546708	0.996832325	0.945442816	0.987546708	0.986847931
	wgEncodeAwgTfbsUtaMc7C1ctfUniPk	0.96322615	0.983464163	0.982502335	0.950295385	0.992659	0.989158124	0.912539422	0.973218354	0.971494767
hae2f1	wgEncodeAwgTfbsSydhHelas3Hae2f1UniPk	0.90175	0.947076393	0.951962327	0.877188594	0.959215713	0.952329294	0.83891946	0.919215713	0.91823167
	wgEncodeAwgTfbsSydhMc7Hae2f1UcdUniPk	0.916362689	0.940777897	0.940704033	0.833376759	0.912059083	0.916972224	0.799895779	0.892554093	0.885060299
ezh2	wgEncodeAwgTfbsBroadDm41Ezh239875UniPk	0.916666667	0.96123861	0.962138618	0.810730253	0.903162569	0.894674567	0.770491803	0.959317579	0.866846376
	wgEncodeAwgTfbsBroadHelas3Ezh239875UniPk	0.890449438	0.926615793	0.93887488	0.725352113	0.829197726	0.813475499	0.721126761	0.806652736	0.80065835
	wgEncodeAwgTfbsBroadHepg2Ezh239875UniPk	0.913109756	0.957769357	0.963079926	0.785332315	0.874633864	0.873067675	0.754010695	0.832088874	0.842561337
	wgEncodeAwgTfbsBroadHsmttEzh239875UniPk	0.894480519	0.957669656	0.9554079	0.777597403	0.856809289	0.865190107	0.76461039	0.834264299	0.847344829
	wgEncodeAwgTfbsBroadHuvecEzh239875UniPk	0.900588235	0.951987931	0.954443723	0.815665489	0.901187018	0.899295497	0.796819788	0.87603636	0.87603636
	wgEncodeAwgTfbsBroadK562Ezh239875UniPk	0.891369048	0.958288526	0.958823006	0.712797619	0.838244357	0.831873219	0.726190476	0.785699367	0.800222578
fos	wgEncodeAwgTfbsHaibA549Fosl2V0422111Eioh02UniPk	0.950214516	0.975199459	0.970925562	0.911691098	0.972700515	0.976504274	0.909992849	0.972700515	0.969329745
	wgEncodeAwgTfbsHaibH1thesFosl1sc183V0416102UniPk	0.875	0.95633997	0.950293485	0.818181818	0.918745327	0.920696925	0.761363636	0.876779337	0.862268519
	wgEncodeAwgTfbsHaibHepg2Fosl2V0416101UniPk	0.939415323	0.971350875	0.966091938	0.916431452	0.964507486	0.973827628	0.895866935	0.964507486	0.960574254
	wgEncodeAwgTfbsHaibK562Fosl1sc183V0416101UniPk	0.960646042	0.985219687	0.982015648	0.949920328	0.984804657	0.988832663	0.936717505	0.984804657	0.982174814
	wgEncodeAwgTfbsSydhGm12878CfosUniPk	0.958715596	0.987099865	0.98216456	0.963302752	0.987571242	0.992792167	0.940366972	0.987571242	0.985126611
	wgEncodeAwgTfbsSydhHelas3CfosUniPk	0.953918322	0.979633816	0.975927169	0.946467991	0.978959218	0.986751857	0.9299117	0.978959218	0.97785372
	wgEncodeAwgTfbsSydhHuvecCfosUcdUniPk	0.955656654	0.976304901	0.973652647	0.923798037	0.971690279	0.976869706	0.913601228	0.971690279	0.969016973
	wgEncodeAwgTfbsSydhK562CfosUniPk	0.959893048	0.985088747	0.984643088	0.957553476	0.986272465	0.993744903	0.94618984	0.986272465	0.986072256
	wgEncodeAwgTfbsSydhMc71OaesCfosTam112hHvdUniPk	0.965755717	0.983470857	0.983582746	0.937111303	0.980042987	0.986065795	0.930920044	0.980042987	0.979987417
	wgEncodeAwgTfbsSydhMc71OaesCfosTam14hHvdUniPk	0.962947494	0.982641873	0.982432063	0.934994033	0.976442589	0.982960812	0.923329356	0.976442589	0.976208278
	wgEncodeAwgTfbsSydhMc71OaesCfosTamHvdUniPk	0.967731326	0.985919882	0.986052643	0.933818155	0.983292507	0.986884482	0.936376261	0.983292507	0.983076699
foxa1	wgEncodeAwgTfbsUChicagoK562EfosUniPk	0.958581349	0.984476095	0.981928356	0.951612903	0.98394255	0.986669652	0.943672457	0.98394255	0.981733822
	wgEncodeAwgTfbsHaibA549Foxa1V0416102Dex100nmUniPk	0.913129973	0.95129008	0.950918751	0.885865959	0.957314984	0.955291812	0.860982084	0.935769494	0.933941803
	wgEncodeAwgTfbsHaibEcc1Foxa1sc6553V0416102Dm002p1hUniPk	0.901893287	0.959879113	0.957340394	0.906936665	0.960120624	0.959841443	0.881947436	0.947674774	0.941643076
	wgEncodeAwgTfbsHaibHepg2Foxa1sc101058V0416101UniPk	0.949372335	0.974697762	0.973637583	0.920653719	0.96734445	0.978814681	0.90490289	0.96734445	0.965966874
	wgEncodeAwgTfbsHaibHepg2Foxa1sc6553V0416101UniPk	0.958516155	0.978160245	0.977744452	0.924561229	0.9771351747	0.980145582	0.911697248	0.9771351747	0.970407914
	wgEncodeAwgTfbsHaibT47dFoxa1sc6553V0416102Dm002p1hUniPk	0.945452317	0.97310583	0.971372579	0.916457248	0.963279157	0.976185099	0.895188477	0.963279157	0.960497363
	wgEncodeAwgTfbsHaibA549GabpV0422111Eioh02UniPk	0.911353712	0.953610247	0.947943801	0.889713911	0.955907075	0.952136175	0.852587901	0.934361585	0.928213423
gabp	wgEncodeAwgTfbsHaibGm12878GabpPcr2xUniPk	0.929577465	0.96616409	0.961683851	0.910301606	0.96864024	0.968556607	0.866823345	0.94619475	0.938022722
	wgEncodeAwgTfbsHaibH1thesGabpPcr1xUniPk	0.871657754	0.93360278	0.9058876	0.9058876	0.964774484	0.9688494	0.866190901	0.934096235	0.934096235
	wgEncodeAwgTfbsHaibHelas3GabpPcr1xUniPk	0.938262195	0.965397353	0.965608964	0.92035061	0.978431057	0.974865318	0.886432927	0.956169531	0.952551526
	wgEncodeAwgTfbsHaibHepg2GabpPcr2xUniPk	0.930244399	0.964287964	0.962610836	0.904022403	0.957748201	0.965998538	0.858452138	0.937748201	0.931782273
	wgEncodeAwgTfbsHaibK562GabpV0416101UniPk	0.934642857	0.962630104	0.961100048	0.913882437	0.967857768	0.972390111	0.86742898	0.947857768	0.943805196
gata2	wgEncodeAwgTfbsHaibK562Gata2sc267Pcr1xUniPk	0.95082403	0.975902414	0.975303306	0.906262465	0.978432335	0.975331235	0.891769711	0.958432335	0.957509936
	wgEncodeAwgTfbsSydhHuvecGata2UcdUniPk	0.926443028	0.952802621	0.952943369	0.860650361	0.948633699	0.940798399	0.846218724	0.928633699	0.923887887
	wgEncodeAwgTfbsSydhK562Gata2UcdUniPk	0.947166186	0.972152507	0.971558025	0.896468893	0.979777843	0.964877534	0.876291136	0.949777843	0.948334734
	wgEncodeAwgTfbsSydhShsy5yGata2UcdUniPk	0.93270881	0.95577828	0.9543595	0.873927346	0.934937631	0.945020744	0.842176773	0.924937631	0.921386208
gata3	wgEncodeAwgTfbsUChicagoK562Egata2UniPk	0.910523979	0.947419094	0.944200476	0.828742781	0.908260795	0.914858895	0.812972012	0.908260795	0.908155382
	wgEncodeAwgTfbsHaibT47dGata3sc268V0416102Dm002p1hUniPk	0.92233809	0.948880228	0.947442869	0.868533004	0.93025399	0.948634346	0.835460409	0.92025399	0.916813639
	wgEncodeAwgTfbsSydhMc77Gata3UcdUniPk	0.923333333	0.957052866	0.959752083	0.794743429	0.88498904	0.881770563	0.766374635	0.86248405	0.855711702
	wgEncodeAwgTfbsSydhShsy5yGata3sc269sc269UcdUniPk	0.920032051	0.956137215	0.953719849	0.840173132	0.924063116	0.920775511	0.815165117	0.904063116	0.896837464

jun	wgEncodeAwgTfbsSydhHelas3CjunlggrabUniPk	0.949671516	0.972760666	0.970783644	0.923031796	0.968087417	0.974633686	0.906488326	0.968087417	0.96687566
	wgEncodeAwgTfbsSydhHepg2CjunlggrabUniPk	0.962889066	0.985839286	0.982198341	0.953293413	0.98558971	0.98927931	0.942714571	0.98558971	0.985056981
	wgEncodeAwgTfbsSydhHuvecCjunUniPk	0.956468956	0.98373673	0.982780969	0.942334374	0.980563188	0.985992833	0.929587236	0.980563188	0.979264503
	wgEncodeAwgTfbsSydhK562CjunUniPk	0.955015512	0.977371121	0.976042496	0.976042496	0.938178996	0.989611652	0.934816348	0.983094612	0.982041453
jund	wgEncodeAwgTfbsHaibHepg2JundPcr1xUniPk	0.939550141	0.970267557	0.965753801	0.909090909	0.969480733	0.970479897	0.888940956	0.959480733	0.956054922
	wgEncodeAwgTfbsSydhGmi12878JundUniPk	0.93852459	0.970917548	0.976423997	0.924024641	0.970292467	0.974812277	0.886036961	0.950292467	0.951291326
	wgEncodeAwgTfbsSydhH1hescJundlggrabUniPk	0.931576145	0.961444237	0.960435997	0.917976032	0.96937097	0.971768478	0.886284953	0.95937097	0.952040006
	wgEncodeAwgTfbsSydhHelas3JundlggrabUniPk	0.958875163	0.979700207	0.976706462	0.927160393	0.979441603	0.983888539	0.927322982	0.979441603	0.977586394
	wgEncodeAwgTfbsSydhHepg2JundlggrabUniPk	0.969889937	0.9880697	0.98536168	0.958254717	0.989065205	0.992921004	0.953301887	0.989065205	0.988388416
	wgEncodeAwgTfbsSydhK562JundlggrabUniPk	0.949209788	0.972671042	0.970416542	0.926891453	0.967290354	0.978634423	0.900121104	0.967290354	0.963503005
	wgEncodeAwgTfbsUchicagoK562EjundUniPk	0.933741861	0.965570726	0.96085864	0.895719621	0.952576473	0.963055364	0.879919563	0.952576473	0.947968112
max	wgEncodeAwgTfbsHaibK562MaxV0416102UniPk	0.926879271	0.951937826	0.948597368	0.881940885	0.945841041	0.954578542	0.852269491	0.954578542	0.930268741
	wgEncodeAwgTfbsSydhGmi12878MaxlggmusUniPk	0.910728745	0.944695349	0.944293128	0.847680778	0.902187275	0.929136505	0.815272433	0.902187275	0.896507256
	wgEncodeAwgTfbsSydhH1hescMaxUcdUniPk	0.944899818	0.967637387	0.969034155	0.896331738	0.950535224	0.961559662	0.866940077	0.950535224	0.942560224
	wgEncodeAwgTfbsSydhHelas3MaxlggrabUniPk	0.91588785	0.939198882	0.941591117	0.862806198	0.937896405	0.947168268	0.840560893	0.927896405	0.921595561
	wgEncodeAwgTfbsSydhHepg2MaxlggrabUniPk	0.920783646	0.952201945	0.951302439	0.885385599	0.93477029	0.957047566	0.851512569	0.93477029	0.928464773
	wgEncodeAwgTfbsSydhHuvecMaxUniPk	0.929522752	0.968975224	0.968849473	0.926727727	0.965020976	0.979235741	0.889536497	0.955020976	0.958086747
	wgEncodeAwgTfbsSydhK562MaxlggrabUniPk	0.926184296	0.947712134	0.94701115	0.874969574	0.946328059	0.956597749	0.85525355	0.936328059	0.932049288
	wgEncodeAwgTfbsSydhNb4MaxUniPk	0.928665883	0.952897059	0.951446807	0.888170463	0.95587066	0.961526207	0.866568699	0.94587066	0.941169865
	wgEncodeAwgTfbsSydhNb4CmycUniPk	0.913920124	0.936986807	0.9378661	0.875303016	0.933117592	0.953287367	0.851449627	0.933117592	0.927898233
myc	wgEncodeAwgTfbsUtaGmi12878CmycUniPk	0.906164384	0.960087103	0.956873497	0.839506173	0.912906158	0.923925951	0.814128944	0.892906158	0.891474415
	wgEncodeAwgTfbsUtaH1hescCmycUniPk	0.852459016	0.933079197	0.926011153	0.779381443	0.868000616	0.855650061	0.748453608	0.865873626	0.849398
	wgEncodeAwgTfbsUtaHepg2CmycUniPk	0.923690205	0.954745605	0.959209989	0.871721797	0.94308808	0.949414916	0.819270239	0.91308808	0.907561889
	wgEncodeAwgTfbsBroadHelas3Pol2bUniPk	0.933946488	0.958247401	0.967682666	0.770711229	0.875316451	0.861697658	0.769037657	0.852771461	0.850531954
pol2b	wgEncodeAwgTfbsBroadHuvecPol2bUniPk	0.923224568	0.952171712	0.959268964	0.796065259	0.879335978	0.888508371	0.772552783	0.856790988	0.860913021
	wgEncodeAwgTfbsBroadNhekPol2bUniPk	0.92270318	0.953264492	0.955521998	0.768788683	0.859715156	0.853416667	0.74137931	0.837170166	0.823463465
	wgEncodeAwgTfbsHaibA5495in3ak20V0422111Etioh02UniPk	0.92268908	0.953188553	0.953952223	0.805042017	0.904915369	0.903427207	0.789495798	0.883369879	0.871464375
sin3a	wgEncodeAwgTfbsHaibHepg2Sin3ak20Pcr1xUniPk	0.90300798	0.937439569	0.941038831	0.837709197	0.915412545	0.924188525	0.806233686	0.895412545	0.888517651
	wgEncodeAwgTfbsHaibK5625in3ak20V0416101UniPk	0.9116	0.939784526	0.940987269	0.844568914	0.92572583	0.932135374	0.808961792	0.90572583	0.896874965
	wgEncodeAwgTfbsHaibPanc1Sin3ak20V0416101UniPk	0.910056657	0.934654971	0.938707429	0.817569961	0.912584459	0.905945549	0.794190577	0.872584459	0.873823145
	wgEncodeAwgTfbsSydhH1hescSin3amb6001263lggrabUniPk	0.909112482	0.937402317	0.938115873	0.84652819	0.921609095	0.933268246	0.809139466	0.901609095	0.894831971
sp1	wgEncodeAwgTfbsHaibH1hescSp1Pcr1xUniPk	0.904431664	0.948863103	0.948704917	0.861129905	0.931097726	0.941835153	0.812584574	0.907130636	0.900520952
	wgEncodeAwgTfbsHaibHepg2Sp1Pcr1xUniPk	0.931517821	0.95834041	0.95819242	0.87484982	0.944655921	0.95956545	0.861934321	0.944655921	0.939686424
sp2	wgEncodeAwgTfbsHaibH1hescSp2V0422111UniPk	0.932291667	0.962146856	0.970924479	0.90605428	0.967384133	0.971042665	0.852818372	0.943417043	0.935852729
	wgEncodeAwgTfbsHaibHepg2Sp2V0422111UniPk	0.919230769	0.962175493	0.963301225	0.943159923	0.97152905	0.981237002	0.868978805	0.95152905	0.94655563
srf	wgEncodeAwgTfbsHaibH1hescSrfPcr1xUniPk	0.918163673	0.965280755	0.967361391	0.90664004	0.961294055	0.977585519	0.857214179	0.937327965	0.935134947
	wgEncodeAwgTfbsHaibHepg2SrfV0416101UniPk	0.945610687	0.967681851	0.971221249	0.901146132	0.94204687	0.968956676	0.860553964	0.95204687	0.938478174
	wgEncodeAwgTfbsHaibK562SrfV0416101UniPk	0.917025862	0.955832327	0.955953349	0.898058252	0.95728591	0.960369847	0.832254585	0.91728591	0.910325318
stat3	wgEncodeAwgTfbsSydhGmi12878Stat3lggmusUniPk	0.92032967	0.939557433	0.945443036	0.799764429	0.872305463	0.888242743	0.772281115	0.862305463	0.855740239
	wgEncodeAwgTfbsSydhHelas3Stat3lggrabUniPk	0.910608309	0.942523918	0.942633521	0.877944723	0.944389927	0.952074257	0.867186051	0.944389927	0.937876841
	wgEncodeAwgTfbsSydhMcf10aesStat3Etioh01bUniPk	0.932549505	0.959345391	0.961487779	0.919218315	0.966906452	0.979398218	0.903198318	0.966906452	0.96674921
	wgEncodeAwgTfbsSydhMcf10aesStat3Etioh01cUniPk	0.958588957	0.978586024	0.978472153	0.917631758	0.970698881	0.979857027	0.909023348	0.970698881	0.969274885
	wgEncodeAwgTfbsSydhMcf10aesStat3Etioh01UniPk	0.96055239	0.980392639	0.979239364	0.917234262	0.957475848	0.972174401	0.884623323	0.957475848	0.955823082
	wgEncodeAwgTfbsSydhMcf10aesStat3Tam112hVdUniPk	0.955292909	0.976832175	0.976903927	0.924712533	0.968945867	0.978887983	0.906725766	0.968945867	0.967959943
	wgEncodeAwgTfbsSydhMcf10aesStat3TamUniPk	0.957081793	0.979399245	0.979057613	0.913701479	0.979258474	0.979258474	0.971120468	0.971120468	0.970264791
taf1	wgEncodeAwgTfbsHaibA549Taf1V0422111Etioh02UniPk	0.899847095	0.939963329	0.94534253	0.798623502	0.884121985	0.891743902	0.760897272	0.852576495	0.848556114
	wgEncodeAwgTfbsHaibGmi12878Taf1Pcr1xUniPk	0.892831541	0.928793038	0.934314916	0.839519455	0.914693942	0.922443295	0.799713107	0.892247952	0.886747354
	wgEncodeAwgTfbsHaibGmi12892Taf1V0416102UniPk	0.923430736	0.951575024	0.952298754	0.837303736	0.915890328	0.921168683	0.79182458	0.883444338	0.875705584
	wgEncodeAwgTfbsHaibHepg2Taf1Pcr2xUniPk	0.908102144	0.932080525	0.937359902	0.847075516	0.912336716	0.92721234	0.801986442	0.892336716	0.889233221
	wgEncodeAwgTfbsHaibK562Taf1V0416101UniPk	0.897952218	0.943234905	0.942443306	0.860361898	0.9243361074	0.938785953	0.9230361074	0.812905428	0.897154494
	wgEncodeAwgTfbsHaibSknsHtaf1V0416101UniPk	0.919708029	0.939001105	0.944282411	0.858342461	0.929375316	0.938658103	0.82475356	0.909375316	0.90641265
tbpi	wgEncodeAwgTfbsSydhGmi12878TbpllggmusUniPk	0.883756868	0.917429597	0.922914289	0.81838488	0.907622634	0.907734433	0.782130584	0.877622634	0.873272679
	wgEncodeAwgTfbsSydhHepg2TbpllggrabUniPk	0.851851852	0.911842038	0.913618065	0.826647037	0.902761026	0.920121869	0.800515274	0.892761026	0.887566432
	wgEncodeAwgTfbsSydhK562TbpllggmusUniPk	0.872794118	0.92201582	0.926061582	0.848179026	0.904266609	0.929865991	0.805909024	0.904266609	0.890762892
	wgEncodeAwgTfbsSydhH1hescCtbp2UcdUniPk	0.876169591	0.928687109	0.925347152	0.809472934	0.906389133	0.905655993	0.804843305	0.876389133	0.880934709
tead4	wgEncodeAwgTfbsHaibH1hescTead4sc101184V0422111UniPk	0.926944729	0.970076408	0.966535946	0.927775643	0.995279	0.981166562	0.90216417	0.967017747	0.966114984
	wgEncodeAwgTfbsHaibHepg2Tead4sc101184V0422111UniPk	0.89041555	0.93832116	0.936591945	0.873071764	0.944086956	0.950535156	0.85362173	0.934086956	0.930160504
	wgEncodeAwgTfbsHaibK562Tead4sc101184V0422111UniPk	0.89905754	0.946879022	0.94491757	0.88630726	0.948614869	0.956745104	0.861832314	0.956745104	0.935029179
tead4	wgEncodeAwgTfbsHaibGmi12878Yy1sc281Pcr1xUniPk	0.903737542	0.949305852	0.944030902	0.902542373	0.968021426	0.966811927	0.859172483	0.945575436	0.937243023
	wgEncodeAwgTfbsHaibGmi12892Yy1V0416101UniPk	0.89874031	0.947688631	0.945154965	0.904215797	0.959444212	0.966833639	0.853981586	0.937478222	0.930555469
	wgEncodeAwgTfbsHaibH1hescYy1sc281V0416102UniPk	0.895228795	0.947177351	0.947199624	0.909877232	0.970930892	0.969395112	0.8671875	0.942669639	0.938942195

	wgEncodeAwgTfbsHaibHct116Yy1sc281V0416101UniPk	0.896331738	0.941345127	0.938991475	0.903612053	0.950040268	0.969596038	0.840151666	0.927778702	0.92207301
	wgEncodeAwgTfbsHaibHepg2Yy1sc281V0416101UniPk	0.885869565	0.927902056	0.928387117	0.880761523	0.948143561	0.953909403	0.835098769	0.918143561	0.915587579
	wgEncodeAwgTfbsHaibK562Yy1V0416101UniPk	0.896712662	0.940172369	0.943311138	0.900243803	0.961376055	0.968565238	0.853311662	0.931376055	0.930597608
	wgEncodeAwgTfbsHaibK562Yy1V0416102UniPk	0.903730703	0.950386163	0.948015218	0.898970399	0.969843576	0.964517942	0.853281853	0.939843576	0.933381808
	wgEncodeAwgTfbsHaibSknsraYy1sc281V0416102UniPk	0.891852094	0.933600511	0.933329443	0.88224697	0.951933846	0.95710906	0.836554209	0.921933846	0.91526068
	wgEncodeAwgTfbsSydhK562Yy1UcdUniPk	0.905857741	0.961748466	0.955364285	0.945549738	0.942752013	0.984243006	0.859162304	0.942752013	0.937813056
	wgEncodeAwgTfbsSydhNi2d1Yy1UcdUniPk	0.901175214	0.958704727	0.954373306	0.939475094	0.976732282	0.981238846	0.841992501	0.936732282	0.927513408
nfkb	wgEncodeAwgTfbsSydhGm10847NfkbTnfalgggrabUniPk	0.927197802	0.952697345	0.958203955	0.858674732	0.932998519	0.944656114	0.836403629	0.922998519	0.913360622
	wgEncodeAwgTfbsSydhGm12878NfkbTnfalgggrabUniPk	0.923906531	0.954948111	0.955436435	0.880467346	0.968720635	0.950170249	0.845566207	0.928720635	0.924502516
	wgEncodeAwgTfbsSydhGm12891NfkbTnfalgggrabUniPk	0.926198934	0.955128937	0.949887228	0.869692663	0.933391953	0.949308081	0.845620892	0.933391953	0.927306931
	wgEncodeAwgTfbsSydhGm12892NfkbTnfalgggrabUniPk	0.923602484	0.956991688	0.95859973	0.867267641	0.935487448	0.946674606	0.843021449	0.925487448	0.920384032
	wgEncodeAwgTfbsSydhGm18526NfkbTnfalgggrabUniPk	0.923013245	0.945829298	0.962823678	0.868159204	0.933023378	0.949081413	0.83747927	0.903023378	0.914317912
	wgEncodeAwgTfbsSydhGm19099NfkbTnfalgggrabUniPk	0.937007874	0.966319256	0.966215594	0.895341207	0.956302321	0.964173039	0.869094488	0.946302321	0.941521266
	wgEncodeAwgTfbsHaibGm12878Pax5c20Pcr1xUniPk	0.918004817	0.948947972	0.947612453	0.874610983	0.936879005	0.945929533	0.813974501	0.904433015	0.897156826
pax5	wgEncodeAwgTfbsHaibGm12878Pax5n19Pcr1xUniPk	0.924574523	0.947290544	0.946924907	0.868583957	0.939164582	0.941883475	0.824993552	0.916718592	0.91048335
	wgEncodeAwgTfbsHaibGm12891Pax5c20V0416101UniPk	0.917467949	0.961743508	0.963620486	0.813654618	0.903346576	0.919274745	0.796787149	0.880900586	0.875150342
	wgEncodeAwgTfbsHaibGm12892Pax5c20V0416101UniPk	0.894400786	0.941944317	0.941123513	0.855353635	0.927427714	0.935692379	0.807956778	0.904981724	0.890809212
hdac	wgEncodeAwgTfbsBroadK562Hdac2a300705aUniPk	0.932729008	0.962936213	0.964709332	0.813454198	0.89964288	0.899855137	0.784351145	0.87709789	0.872300208
	wgEncodeAwgTfbsBroadK562Hdac6a301341aUniPk	0.854910714	0.926086018	0.929138412	0.764044944	0.850273317	0.85439405	0.723595506	0.827728327	0.817608537
	wgEncodeAwgTfbsHaibH1heschdac2sc6296V0416102UniPk	0.916517857	0.953098905	0.959519573	0.836087539	0.916926996	0.923173164	0.812862885	0.892959906	0.889395656
	wgEncodeAwgTfbsHaibHepg2Hdac2sc6296V0416101UniPk	0.913095876	0.951451398	0.952401827	0.877460828	0.945611229	0.954168275	0.858577742	0.935611229	0.933614691
	wgEncodeAwgTfbsUchicagoK562Ehdac8UniPk	0.91616085	0.943523932	0.949165995	0.75	0.845204645	0.848951516	0.73245614	0.823252655	0.822087044
	wgEncodeAwgTfbsHaibK562Hdac2sc6296V0416102UniPk	0.928362573	0.963395267	0.969525081	0.853889943	0.939859152	0.945739295	0.826185958	0.909859152	0.907511766
	wgEncodeAwgTfbsHaibGm12878P300Pcr1xUniPk	0.91468254	0.952384406	0.954917323	0.853525323	0.917793492	0.926954541	0.805858987	0.895347502	0.887740943
p300	wgEncodeAwgTfbsHaibHepg2P300V0416101UniPk	0.936699598	0.961956981	0.96014251	0.886744122	0.96953301	0.964989307	0.874302443	0.94953301	0.948198734
	wgEncodeAwgTfbsHaibSknsraP300V0416102UniPk	0.920643608	0.942804376	0.942077164	0.854969352	0.931047043	0.933329973	0.826729422	0.911047043	0.908903841
	wgEncodeAwgTfbsHaibT47dP300V0416102Dm002p1hUniPk	0.907751092	0.948913599	0.950486728	0.854360095	0.920929073	0.935081052	0.826324413	0.910929073	0.908430977
	wgEncodeAwgTfbsSydhGm12878P300bUniPk	0.936573311	0.957028124	0.959393958	0.893195876	0.950314708	0.961614224	0.863917526	0.940314708	0.937597845
	wgEncodeAwgTfbsSydhHelasP300sc584sc584lgggrabUniPk	0.935240366	0.967007933	0.96508168	0.885952712	0.950866629	0.959599595	0.877111067	0.950866629	0.94879318
	wgEncodeAwgTfbsSydhK562P300lgggrabUniPk	0.93124258	0.955420205	0.955276592	0.889878302	0.944183014	0.963425141	0.86811121	0.944183014	0.941663198
	wgEncodeAwgTfbsHaibA549Elf1V0422111Etoh02UniPk	0.934976247	0.956746846	0.957447049	0.888657957	0.956412356	0.954623914	0.854216152	0.934868064	0.928551867
elf1	wgEncodeAwgTfbsHaibGm12878Elf1sc631V0416101UniPk	0.921896011	0.950035048	0.951222768	0.880295898	0.95208341	0.953084542	0.848800717	0.92963792	0.925733441
	wgEncodeAwgTfbsHaibHepg2Elf1sc631V0416101UniPk	0.941666667	0.966951698	0.967416537	0.929086029	0.972271706	0.98089161	0.893063992	0.962271706	0.960242316
	wgEncodeAwgTfbsHaibK562Elf1sc631V0416102UniPk	0.94747512	0.971450647	0.971448522	0.930236845	0.977726177	0.981519205	0.907473966	0.967726177	0.966966238
	Average	0.930309066	0.961723727	0.961696438	0.890211431	0.948228783	0.954721484	0.86172762	0.935113231	0.931521406

Table S11: Comprehensive summary statistics (Q1, Median, Q3, IQR, Min, Max, Lower/Upper whiskers, and Outliers) for Accuracy, PR-AUC, and ROC-AUC across models.

Model	Accuracy								PR-AUC								ROC-AUC							
	Q1	Med	Q3	IQR	Min	Max	L.W.	U.W.	Q1	Med	Q3	IQR	Min	Max	L.W.	U.W.	Q1	Med	Q3	IQR	Min	Max	L.W.	U.W.
TFBS-Finder	0.912	0.929	0.956	0.044	0.852	0.980	0.852	0.980	0.949	0.960	0.978	0.029	0.912	0.992	0.912	0.992	0.949	0.960	0.976	0.028	0.914	0.993	0.914	0.993
TFBert	0.855	0.896	0.933	0.077	0.713	0.976	0.740	0.976	0.930	0.957	0.976	0.046	0.829	0.995	0.861	0.995	0.939	0.964	0.981	0.043	0.813	0.997	0.875	0.997
SAResNet	0.815	0.862	0.910	0.095	0.721	0.954	0.721	0.954	0.906	0.943	0.971	0.066	0.786	0.990	0.807	0.990	0.901	0.938	0.969	0.069	0.800	0.990	0.800	0.990
BERT-TFBS	0.809	0.853	0.906	0.097	0.674	0.952	0.674	0.952	0.894	0.927	0.962	0.068	0.741	0.985	0.792	0.985	0.891	0.926	0.963	0.072	0.738	0.986	0.782	0.986
DSAC	0.755	0.797	0.833	0.078	0.662	0.909	0.662	0.909	0.840	0.885	0.913	0.074	0.720	0.970	0.729	0.970	0.836	0.882	0.910	0.074	0.726	0.967	0.726	0.967
D-SSCA	0.729	0.791	0.873	0.144	0.569	0.930	0.569	0.930	0.825	0.883	0.947	0.122	0.569	0.977	0.642	0.977	0.819	0.874	0.942	0.123	0.602	0.977	0.635	0.977
DLBSS	0.734	0.804	0.883	0.149	0.461	0.943	0.511	0.943	0.823	0.901	0.956	0.132	0.499	0.985	0.625	0.985	0.819	0.890	0.952	0.132	0.495	0.984	0.621	0.984
CRPTS	0.741	0.798	0.872	0.131	0.561	0.932	0.561	0.932	0.827	0.884	0.946	0.119	0.532	0.976	0.649	0.976	0.815	0.874	0.942	0.126	0.581	0.979	0.626	0.979
DeepBind	0.728	0.790	0.874	0.146	0.539	0.927	0.539	0.927	0.813	0.880	0.942	0.129	0.515	0.980	0.620	0.980	0.803	0.867	0.940	0.137	0.553	0.979	0.597	0.979
DanQ	0.707	0.778	0.871	0.164	0.542	0.940	0.542	0.940	0.797	0.870	0.946	0.149	0.564	0.984	0.574	0.984	0.789	0.857	0.939	0.151	0.556	0.984	0.563	0.984