

Supplementary Data

Chromatin properties of cis-regulatory modules in ES cells probed by manipulation of transcription factors

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Supplementary Table S1. ChIP-seq data on binding of transcription factors and chromatin modifications in mouse ES cells

Transcription factor, chromatin mark	Cells	Peaks used	Tags used	Reference
Pou5f1	ES cells	1	0	(Marson et al. 2008)
Nanog	ES cells	1	0	(Marson et al. 2008)
Sox2	ES cells	1	0	(Marson et al. 2008)
Klf4	ES cells	1	0	(Chen et al. 2008)
Tcfcp2l1	ES cells	1	0	(Chen et al. 2008)
Stat3	ES cells	1	0	(Chen et al. 2008)
P300	ES cells	1	0	(Chen et al. 2008)
Smad1	ES cells	1	0	(Chen et al. 2008)
Tcf3	ES cells	1	0	(Marson et al. 2008)
Cdx2	ES cells, Cdx2 induced	1	0	(Nishiyama et al. 2009)
Myod1	Myoblasts	1	0	(Cao et al. 2010)
Sfpi1	Macrophages	1	0	(Lefterova et al. 2010)
P300	ES cells	0	1	(Creyghton et al. 2010)
P300	ES cells	0	1	(Schnetz et al. 2010)
Chd7	ES cells	0	1	(Schnetz et al. 2010)
Med1	ES cells	0	1	(Kagey et al. 2010)
Med12	ES cells	0	1	(Kagey et al. 2010)
Nipbl	ES cells	0	1	(Kagey et al. 2010)
Smc1	ES cells	0	1	(Kagey et al. 2010)
Smc3	ES cells	0	1	(Kagey et al. 2010)
Rad21	ES cells	0	1	(Nitzsche et al. 2011)
Suz12	ES cells	0	1	(Chen et al. 2008)
Suz12	ES cells	0	1	(Ku et al. 2008)
Suz12	ES cells	0	1	(Young et al. 2011)
Ezh2	ES cells	0	1	(Ku et al. 2008)
Ring1b	ES cells	0	1	(Ku et al. 2008)
Mtf2	ES cells	0	1	(Li et al. 2010)
Jarid2	ES cells	0	1	(Li et al. 2010)
Setdb1	ES cells	0	1	(Bilodeau et al. 2009)

Ctcf	ES cells	0	1	(Handoko et al. 2011)
Brg1	ES cells	0	1	(Ho et al. 2011)
Mbd3	ES cells	0	1	(Yildirim et al. 2011)
H3K27ac	ES cells	0	1	(Creyghton et al. 2010)
H3K27me3	ES cells	0	1	(Ho et al. 2011)
H3K27me3	ES cells	0	1	(Mikkelsen et al. 2007)
H3K27me3	ES cells	0	1	(Young et al. 2011)
H3K36me3	ES cells	0	1	(Mikkelsen et al. 2007)
H3K4me1	ES cells	0	1	(Meissner et al. 2008)
H3K4me2	ES cells	0	1	(Meissner et al. 2008)
H3K4me3	ES cells	0	1	(Mikkelsen et al. 2007)
H3K4me3	ES cells	0	1	(Marks et al. 2009)
H3K9ac	ES cells	0	1	(Hezroni et al. 2011)
H3K9me3	ES cells	0	1	(Bilodeau et al. 2009)
				(Ab8898)
H3K9me3	ES cells	0	1	(Mikkelsen et al. 2007)
H3K9me3	ES cells	0	1	(Yuan et al. 2009)
H4K20me3	ES cells	0	1	(Mikkelsen et al. 2007)
Lamin B1 *	ES cells	n/a	n/a	(Kim et al. 2011)

*) Lamin B1 data was obtained using DAM-ID method with hybridization on a full-genome tiling arrays

Supplementary Table S2. Correlation matrix between sets of z-values (to evaluate the association between the change of expression of target genes and presence of factors at transcription factor binding sites) obtained with 7 types of analysis.

Method 1: Pearson correlation; uses average abundance of a factor in all TF binding sites for each target gene. Method 2: Pearson correlation; abundance of a factor is estimated at the TF binding site closest to the TSS of target gene. Method 3: Pearson correlation; uses the highest abundance of factor among TF binding sites associated with target gene. Method 4: Spearman correlation; uses the highest abundance of factor among TF binding sites associated with target gene. Methods 5-7: Multivariate regression (gene expression change is regressed against factor abundance at TF binding sites and distance from binding sites to TSS of target gene); factor abundance is estimated as in methods 1-3, respectively.

	Method 1	Method 2	Method 3	Method 4	Method 5	Method 6	Method 7
Method 1	1.000	0.982	0.976	0.981	0.959	0.953	0.940
Method 2	0.982	1.000	0.957	0.960	0.934	0.930	0.912
Method 3	0.976	0.957	1.000	0.970	0.922	0.972	0.906
Method 4	0.981	0.960	0.970	1.000	0.931	0.937	0.948
Method 5	0.959	0.934	0.922	0.931	1.000	0.963	0.979
Method 6	0.953	0.930	0.972	0.937	0.963	1.000	0.939
Method 7	0.940	0.912	0.906	0.948	0.979	0.939	1.000

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