Mitotic chromosome binding predicts transcription factor properties in interphase

Raccaud et al.

Supplementary Information



Endogenous (n=20)

0

Exogenous ( n= 20 )

25 ŧ r = 0.84 + p = 1e-04 25 50 75 Confocal MBF [%]



Supplementary Figure 1. Examples of MBF measurements by confocal microscopy in ES cells, MBF measurements in NIH-3T3 cells, additional parameters impacting the MBF, and impact of positively charged amino acids on the MBF. Related to Fig. 1.

**a:** Correlations between TF expression and mitotic bound fraction for all TFs with at least 19 cells quantified, sorted from lower to higher mitotic bound fraction.

**b**: Comparison of mitotic bound fractions for endogenous or exogenous (overexpression) of SOX2-SNAP.

**c:** Examples of TF-YPet localization in metaphase cells imaged with wide-field or confocal microscopy. Scale bar: 5µM.

**d:** Correlation between the mitotic bound fractions measured by wide-field or confocal microscopy (n=10). Error bars: SEM.

e: Examples of TF-YPet localization in metaphase cells imaged in ES cells and NIH-3T3 cells. Scale bar: 5µM.

**f**: Correlation between the mitotic bound fractions measured in ES cells and NIH-3T3 cells (for n values see Supplementary Table 3). Error bars: SEM.

**g:** Log ratio of Chromatome over Proteome signal of TFs in M-phase cells from Ginno et al. 2018 in the Depleted, Intermediate, and Enriched bins from this study.

h: MBFs of TFs expressed endogenously or not in ES cells and NIH-3T3 cells.

**i:** Quantification of the impact of all machine learning parameters that were correlated with the mitotic bound fraction and retained at least once by the algorithm (n=500 runs).

**j**: Impact of the NLS sequence or positively charged amino acids on the co-localization of YPet with mitotic chromosomes. (n>10) Error bars: SEM. \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001; NS. not significant. P-values were obtained using a Wilcoxon rank-sum test.

**k**: Comparison of mitotic bound fraction of wildtype TFs (WT) or N-terminally tagged with five arginine residues (5R). Error bars: SEM. \*\* p < 0.01; \*\*\* p < 0.001; NS. not significant.

Boxplots: Boxes: intervals between the 25th and 75th percentile and median (horizontal line). Error bars: 1.5-fold the interquartile range or the closest data point when no data point is outside this range. P-values were obtained using a Wilcoxon rank-sum test.





### Supplementary Figure 2: Correlation of TF mobility with TF size. Related to Fig. 3.

**a**: Correlation between FRAP  $t_{1/2}$  recovery in interphase and the predicted molecular weight of transcription factors.

**b:** Correlation between FRAP  $t_{1/2}$  recovery in mitosis and the predicted molecular weight of transcription factors.

Error bars: SEM (n=10).



#### Supplementary Figure 3: Single molecule imaging of TF-DNA interactions. Related to Fig. 4.

**a:** Representative image of single molecule imaging of TFs. Regions displaying different densities of DNA that we automatically detected are shown in green (heterochromatin) and blue (DNA-dense). Tracks of single molecule events are displayed as in all other colors.

**b:** Mitotic bound fraction of FOXA1, FOXA1\_RR and FOXA1\_SW mutants. Error bars: SEM.

**c:** Selected images of immunofluorescence staining (anti-HA.11 IgG, BioLegend, # 901501, 1:500) of the HA-tagged TFs in selected dox-inducible cell lines (top) and HA signal quantification for all TF-3xHAs (bottom). Scale bar: 20µm.

**d-f:** Correlation between the  $\psi$ on-rate in heterochromatic (**d**), DNA-rich (**e**) and DNA-poor (**f**) regions and the number of ChIP-seq peaks called.

Supplementary Figure 4



## Supplementary Figure 4: Mitotic chromosome binding predicts genome-wide TF occupancy. Related to Fig. 4.

**a**: Correlation between the mitotic bound fraction and the number of ChIP-seq peaks called with MACS2 using a q-value cutoff of 0.01. Duplicates are indicated for OCT4 (yellow), SOX2 (green), BHLHB8 (red), and FOXA1 (dark blue). The two FOXA1 mutants are shown in light blue. Triangles: TFs endogenously expressed in NIH-3T3. Circles: TFs not endogenously expressed in NIH-3T3.

**b**: Correlation between the mitotic bound fraction and the number of ChIP-seq peaks called with HOMER. Same color- and shape-coding as Supplementary Fig. 4a.

**c:** Correlation between the mitotic bound fraction and the number of ChIP-seq peaks called with MACS2 using a downsampling to 10 million reads per samples. Same color- and shape-coding as Supplementary Fig. 4a.

**d:** Correlation between the mitotic bound fraction and the fraction of ChIP-seq reads in peaks (MACS2 q<0.05). Same color- and shape-coding as Supplementary Fig. 4a.

**e**: HA signal quantification for OCT4-3xHA in the presence of YPet-SOX2 in NIH-3T3 cells compared to OCT-3xHA alone.

**f**: Fold-change of the number of ChIP-seq peaks called for OCT4-3xHA in the presence of YPet-SOX2 compared to OCT-3xHA alone using different peak calling settings/algorithms.

**g:** Fraction of reads in peaks recovered for OCT4-3xHA in the presence of YPet-SOX2 in NIH-3T3 cells compared to OCT-3xHA alone (MACS2 q<0.05).

**h**: Correlation between the mitotic bound fraction and the number of peaks overlapping with the most frequently found motif for each TF in accessible chromatin, normalized over the total number of motif occurrence in the genomic regions encompassing accessible chromatin. Same color- and shape-coding as Supplementary Fig. 4a.

**i:** Correlation between the mitotic bound fraction and the number of peaks overlapping with the published TF motif, normalized over the total number of motif occurrences in the genome. Same color- and shape-coding as Supplementary Fig. 4a.

**j**: Correlation between the mitotic bound fraction and the number of peaks in accessible chromatin overlapping with the published TF motif, normalized over the total number of motif occurrences in the accessible genome. Same color- and shape-coding as Supplementary Fig. 4a.





# of merged ChIP-seq peaks

# Supplementary Figure 5: TF capacity to alter chromatin accessibility as a function of genome-wide occupancy and MBF. Related to Fig. 5.

**a:** Correlation between the mitotic bound fraction and the fraction of occupied top motifs in closed chromatin regions (devoid of ATAC-seq peak). Duplicates are indicated for OCT4 (yellow), SOX2 (green), BHLHB8 (red), and FOXA1 (dark blue). The two FOXA1 mutants are shown in light blue. Triangles: TFs endogenously expressed in NIH-3T3. Circles: TFs not endogenously expressed in NIH-3T3. Error bars: SEM.

**b**: Heatmaps showing ChIP-seq signal (left) and log2 ratio of ATAC-seq signal of TF overexpression over control (right) for all overexpressed factors 1 kb around the center of ChIP-seq peaks for each TF. Heatmaps are ordered vertically by log2 ratio for each factor and horizontally by number of ChIP-seq peaks per factor.

**c**: Correlation between the number of ChIP-seq peaks for each TF and the number of TF ChIP-seq peaks with significant increase of chromatin accessibility upon overexpression of the TF. Known pioneers TFs are indicated in green (SOX2) and blue (FOXA1).

**d**: Correlation between the number of ChIP-seq peaks for each TF and the number of TF ChIP-seq peaks with significant decrease of chromatin accessibility upon overexpression of the TF. Same color-coding as Supplementary Fig. 5c.

**e:** Correlation between the number of ChIP-seq peaks for each TF and the number of ATAC-seq peaks with significant change in chromatin accessibility upon overexpression of the TF. Same color-coding as Supplementary Fig. 5c.

**f**: Correlation between the number of ChIP-seq peaks for each TF and the number of ATAC-seq peaks with significant increase of chromatin accessibility upon overexpression of the TF. Same color-coding as Supplementary Fig. 5c.

**g:** Correlation between the number of ChIP-seq peaks for each TF and the number of ATAC-seq peaks with significant decrease of chromatin accessibility upon overexpression of the TF. Same color-coding as Supplementary Fig. 5c.

Supplementary Table 1. Mitotic bound fraction measured on confocal and wide-field microscopes. Related to Supplementary Fig. 1.

Legend	Description			
Transcription	Name of the transo	cription factor		
			fo col micro comu	
MBF confocal	MITOTIC DOUND TRACT	ion measured by con	nocal microscopy	
	Standard error of t	he mean for the mito	tic bound fraction me	asured by confocal
	microscony			asuled by comocal
microscope)	morecopy			
MBF widefield	Mitotic bound fract	ion measured by wid	e-field microscopy	
microscope		,		
SEM (MBF	Standard error of t	he mean for the mito	tic bound fraction me	asured by wide-field
widefield	microscopy			
microscope)				
Transcription	MBF confocal	SEM (MBF	MBF wide-field	SEM (MBF wide-
Factor	microscope [%]	contocal	microscope [%]	field microscope)
Dhibbo	70 5		55.0	4.0
BUINDS	70.5	3.4	55.8	4.0
Cdx2	50.7	3.3	37.1	7.1
Dlx6	67.2	4.3	58.4	6.2
Foxa1	40.9	2.6	46.8	8.6
Hmga2	70.2	6.3	52.6	10.2
Hmgb2	58.4	2.1	37.5	4.2
Hmgn1	62.0	4.5	43.4	4.5
Hoxd10	28.8	1.1	16.2	1.3
MafK	79.5	11.3	79.6	7.7
Max	67.4	4.1	65.0	9.6
Oct4	17.9	0.8	19.8	1.6
Sox15	38.8	3.6	24.5	0.9
Sox2	65.4	8.9	47.7	4.9
Tead1	44.0	6.6	56.5	9.9
Thap4	41.8	5.8	31.5	2.4

Supplementary Table 2. Mitotic bound fraction per transcription factor and associated colocalization group. Related to Figure 1.

Legend	Descripti	on		
Transcription Fac	to Name of t	he transcrip	tion factor	
MBF	Mitotic bo	und fraction		
SEM(MBF)	Standard	error of the	mean for the	mitotic bound frac
n Bin	Number o	t ES cells us	sed for MBF	quantification
Bin	Group as	sociated to t	ne transcripti	on factor as a fun
Transcription Facto	or MBF [%]	SEM(MBF	<sup>;</sup> ) n	Bin
Creb3l2	7.62	1.14	9	Depleted
Srebf2	7.91	0.87	10	Depleted
Ztp84	7.92	0.65	18	Depleted
Tfam	8.33	0.89	14	Depleted
Zdhhc12	8.80	0.96	13	Depleted
Creb3	8.96	0.54	9	Depleted
Zdhhc3	8.99	0.76	10	Depleted
Zdhhc7	9.18	0.56	11	Depleted
Irmt1	9.35	1.24	12	Depleted
Zannc4	9.43	0.88	14	Depleted
Dom1	9.50	0.80	21	Depleted
Zdhhc16	9.67	1.22	6	Depleted
Zdhhc19	10.36	1.05	12	Depleted
Zkscan6	10.58	1.73	13	Depleted
Dcun1d3	10.79	0.78	11	Depleted
Pias3	10.82	1.47	10	Depleted
Zdhhc20	11.01	0.87	13	Depleted
A030053021RIK	11.04	0.99	15	Depleted
Zdhhc1	11.00	1.02	11	Depleted
Lass2	11.67	0.52	10	Depleted
C330016O10Rik	11.90	0.91	28	Depleted
Mbnl3	11.97	1.09	10	Depleted
Nupl2	11.99	0.83	13	Depleted
Zahhcy Prr3	12.02	0.92	13	Depleted
2410081M15Rik	12.50	1.72	11	Depleted
Mael	12.96	1.37	12	Depleted
Zdhhc25	13.10	1.60	14	Depleted
Lzts1	13.10	2.19	10	Depleted
Dzip1	13.29	1.47	10	Depleted
Zfp191	13.72	1.43	13	Depleted
Hes2	13.84	1.29	11	Depleted
Teso Zdbbc14	13.00	0.45	10	Depleted
Sox13	13.97	1.34	11	Depleted
Nr0b1	14.07	1.77	14	Depleted
Hes5	14.09	0.75	19	Depleted
Zbtb20	14.09	0.89	17	Depleted
Zfp687	14.14	1.63	11	Depleted
Lip28	14.16	2.82	10	Depleted
	14.23	1.09	17	Depleted
Spert	14.24	1.27	11	Depleted
Hoxa13	14.26	1.15	18	Depleted
Mbnl2	14.29	1.09	11	Depleted
Rabgef1	14.30	2.69	10	Depleted
Gata5	14.38	2.20	11	Depleted
L3mbtl	14.40	1.18	18	Depleted
IdlZ Dhtf1	14.45	1.59	12	Depleted
Id1	14.49	0.81	21	Depleted
Olia3	14.61	1.22	5	Depleted
Zfp740	14.62	1.52	10	Depleted
Zfp282	14.79	1.17	10	Depleted
Mef2c	14.85	2.26	10	Depleted
Zc3hav1	14.85	1.76	13	Depleted
Rbm10	14.86	0.55	13	Depleted
Zbtb39	14.89	0.92	12	Depleted
Rcl6b	14.94	0.78	17	Depleted
Zfp661	14.97	1.28	14	Depleted
Zfp346	14.99	1.61	10	Depleted
AI894139	15.07	0.78	15	Depleted
Fam164a	15.08	0.63	18	Depleted
Mbnl1	15.16	1.36	10	Depleted
Bach2	15.17	0.98	19	Depleted
LZISZ Mkrp2	15.23	1.38	22	Depleted
Zfp365	15.32	0.69	11	Depleted
Prosapin1	15.32	0.53	15	Depleted
Foxp2	15.38	1.10	14	Depleted
Mef2b	15.39	0.74	12	Depleted
Zfp521	15.45	1.22	13	Depleted
Rnf113a2	15.46	1.53	14	Depleted
Smad2	15.47	1.46	10	Depleted
Stat1	15.50	1.10	10	Depleted
Rogdi Bhrm1	15.59	0.41	15	Depleted
	10.01	1.50	14	Depieteu

75- 440	45.00	4.00	44	Developed
Zfp446	15.62	1.38	11	Depleted
Dmrtc2	15.66	0.59	13	Depleted
Bolo	15 71	1 22	12	Doploted
Reid	15.71	1.55	13	Depieted
MKrn1	15.73	2.52	15	Depleted
Stat3	15.82	1.07	13	Depleted
Abr	15.83	0.82	10	Depleted
Amt	15.05	0.02	10	Depicted
Am	15.64	0.95	17	Depleted
Hmbox1	15.89	1.35	12	Depleted
Tulp3	15.91	1 42	10	Depleted
6420604K16Dik	15.02	0.00	10	Doploted
0430004K13Kik	10.92	0.00	10	Depleted
Zfp92	15.95	0.74	10	Depleted
Pknox1	15.95	1.98	12	Depleted
Phy1	15.00	0.00	12	Depleted
FUXT	13.99	0.90	12	Depieteu
IKZ15	16.01	1.40	19	Depleted
Zbtb12	16.02	1.26	10	Depleted
Zfn692	16.03	1 4 5	15	Depleted
Tab=1	16.00	1.10	10	Depleted
ISHZI	10.03	1.20	19	Depleted
Mef2a	16.09	0.76	14	Depleted
Ascl3	16.14	1.02	10	Depleted
Arid2o	16.16	1.47	11	Doploted
Allusa	10.10	1.47	11	Depleted
Hoxd10	16.16	1.29	11	Depleted
Zfp647	16.16	2.03	11	Depleted
Gmeh1	16 17	1 54	11	Depleted
	10.17	0.00	10	Depicted
Zkscan1	16.20	0.89	10	Depleted
Ahrr	16.23	1.76	12	Depleted
Zfp108	16.24	0.25	11	Depleted
Tut1	16.26	1.00	12	Depleted
TULI NASA	10.20	1.09	12	Depleted
MINT	16.28	0.95	22	Depleted
Foxm1	16.28	2.15	10	Depleted
Nanog	16.29	0.97	10	Depleted
Call2	10.20	1.02		Depleted
ଚଧାର	10.37	1.03	11	Depieted
Zfp57	16.38	2.40	10	Depleted
Spdef	16.40	0.90	11	Depleted
VIF1	16.44	0.00	11	Doplotod
KITI	16.44	0.98	TI	Depleted
Klf4	16.45	1.56	13	Depleted
Tcf23	16.45	0.71	10	Depleted
7fn526	16.10	0.75	10	Doploted
21030	10.47	0.75	10	Depleted
Lztr1	16.54	1.24	10	Intermediate
Lhx9	16.54	0.69	11	Intermediate
Zfp440	16.50	0.66	10	Intermediate
21p449	10.39	0.00	10	Interneulate
Fosl1	16.59	0.80	12	Intermediate
Rbm22	16.62	0.74	11	Intermediate
Rcor2	16 64	1 47	15	Intermediate
	10.04	1.47	10	
Vdr	16.70	1.11	13	Intermediate
Zfp414	16.77	1.40	11	Intermediate
71.01.40	16.00	4.00	10	
Z01048		11.02	12	Intermediate
ZDTD48	16.00	1.02	12	Intermediate
Zbtb48 Npas4	16.82	1.02	12 11	Intermediate Intermediate
Zbtb48 Npas4 Gm1008	16.82 16.82	1.02 1.28 0.97	12 11 10	Intermediate Intermediate Intermediate
Z01048 Npas4 Gm1008 A630042L21Rik	16.82 16.82 16.83	1.02 1.28 0.97 2.22	12 11 10 12	Intermediate Intermediate Intermediate
Z0t048 Npas4 Gm1008 A630042L21Rik Pou6f2	16.82 16.82 16.83 16.90	1.02 1.28 0.97 2.22 0.53	12 11 10 12 10	Intermediate Intermediate Intermediate
20t048 Npas4 Gm1008 A630042L21Rik Pou6f2	16.80 16.82 16.82 16.83 16.90	1.02 1.28 0.97 2.22 0.53	12 11 10 12 10	Intermediate Intermediate Intermediate Intermediate
Z01048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic	16.80 16.82 16.82 16.83 16.90 16.95	1.02 1.28 0.97 2.22 0.53 0.71	12 11 10 12 10 12	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
Z0048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat	16.80 16.82 16.82 16.83 16.90 16.95 16.95	1.02 1.28 0.97 2.22 0.53 0.71 1.13	12 11 10 12 10 12 10 12 10	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
Zbtb48 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zscan14	16.80 16.82 16.82 16.83 16.90 16.95 16.95 16.95	1.02 1.28 0.97 2.22 0.53 0.71 1.13 1.08	12 11 10 12 10 12 10 23	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
Zbtb48 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Zkscan14	16.80           16.82           16.82           16.83           16.90           16.95           16.95           16.97	1.02 1.28 0.97 2.22 0.53 0.71 1.13 1.08 1.01	12 11 10 12 10 12 10 23 17	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
Z0048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a	16.80 16.82 16.83 16.90 16.95 16.95 16.97 16.97 16.97	1.02 1.28 0.97 2.22 0.53 0.71 1.13 1.08 1.01 0.92 1.01 1.02	12 11 10 12 10 12 10 23 17	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1	16.80           16.82           16.83           16.90           16.95           16.95           16.97           16.98	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66	12 11 10 12 10 12 10 12 23 17 15	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
Z0048 Npas4 Gm1008 A630042L21Rik Pou612 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1	16.80         16.82         16.83         16.90         16.95         16.95         16.97         16.98         16.99	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10	12 11 10 12 10 12 10 12 10 23 23 17 15 10	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20	16.80         16.82         16.83         16.90         16.95         16.95         16.97         16.98         16.99	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53	12 11 10 12 10 12 10 23 17 15 10 10	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Listia	16.82           16.82           16.83           16.90           16.95           16.97           16.97           16.98           16.99           16.99	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53	12 11 10 12 10 23 17 15 10 10 10 10 10	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zppat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           16.99	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53	12 11 10 12 12 12 12 12 12 23 17 15 10 10 11	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120	16.80           16.82           16.82           16.90           16.95           16.95           16.97           16.97           16.98           16.99           17.00           17.01	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.56           0.54	12 11 10 12 10 12 10 23 17 15 10 10 10 11 11 11	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.98           16.99           16.99           17.00           17.01	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58	12 11 10 12 10 12 23 17 15 10 10 10 11 11 11	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfn639	16.80           16.82           16.82           16.90           16.95           16.95           16.97           16.98           16.99           17.00           17.01           17.02	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.56           0.54           0.58           0.77	12 11 10 12 10 12 10 23 17 15 10 10 10 11 11 11 11 11 12 12 17 15 10 10 12 17 15 10 12 17 16 17 17 17 18 19 19 19 19 19 19 19 19 19 19	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gm2b2	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.05	1.02           1.28           0.97           2.22           0.053           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77	12 11 10 12 10 12 23 17 15 10 10 11 11 11 11 11 12 12 10 12 17 15 10 12 17 10 12 12 13 14 15 16 17 17 17 18 19 19 19 19 19 19 19 19 19 19	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2	16.80           16.82           16.82           16.90           16.95           16.95           16.97           16.98           16.99           16.99           16.99           16.99           17.00           17.01           17.05	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.56           0.54           0.58           0.77           0.81	12 11 10 12 10 12 10 12 10 12 12 17 15 10 10 11 11 11 11 11 11 12 12 17 15 10 12 17 15 10 12 17 17 17 17 17 17 17 17 17 17	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           17.00           17.02           17.05           17.07	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11	12 11 10 12 10 12 12 10 12 23 17 15 10 10 11 11 11 11 11 11 12 12 12 12	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.98           16.99           17.00           17.02           17.03           17.05           17.08	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.666           1.10           0.53           0.56           0.54           0.58           0.77           0.81           1.11           0.86	12 11 10 12 10 12 10 12 12 12 12 12 17 15 10 11 11 11 11 11 11 11 11 12 12	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Ccsde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.98           16.99           17.00           17.02           17.05           17.07           17.08           17.08	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.56           0.54           0.58           0.77           0.81           1.11           0.86           1.03	12 11 10 12 10 12 10 12 10 12 13 17 15 10 10 11 11 11 11 11 12 12 10 12 13 14 15 10 10 12 13 14 15 10 10 12 13 14 15 10 10 12 15 10 10 12 15 10 10 10 10 10 10 10 10 10 10	Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecat	16.80           16.82           16.83           16.95           16.97           16.97           16.98           16.99           16.99           17.00           17.02           17.03           17.05           17.08           17.26	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.56           0.56           0.56           0.58           0.77           0.81           1.11           0.86           1.03           557	12 11 10 12 10 12 10 23 17 15 10 11 10 11 11 11 12 12 10 11 11 12 10 12 17 15 10 12 17 10 12 12 17 10 12 12 10 12 12 17 10 12 17 10 12 17 10 12 17 10 12 17 10 12 17 10 12 17 10 12 17 10 10 12 17 10 10 12 17 10 10 10 11 10 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 11	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp120 Csde1 Zfp61 Zcchc4 Bcl11a Ecd	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.98           16.99           17.00           17.01           17.02           17.07           17.08           17.10	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.56           0.58           0.77           0.81           1.11           0.86           1.03           0.57	12 11 10 12 10 12 10 12 10 12 23 17 15 10 10 11 11 11 12 11 12 12 10 12 13 12 13 12 13 12 13 13 13 13 13 13 13 13 13 13	Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zppat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp63 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3	16.80           16.82           16.83           16.95           16.95           16.97           16.98           16.99           16.99           17.00           17.02           17.03           17.05           17.08           17.10           17.11	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.54           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07	12 11 10 12 10 12 10 23 17 15 10 10 11 10 11 11 12 10 11 11 12 10 11 10 12 13 10 12 12 13 10 12 12 13 10 12 12 13 10 12 13 10 12 10 12 12 10 12 12 10 12 10 12 12 10 12 10 12 10 12 10 10 12 10 10 12 10 10 10 10 10 10 10 10 10 10	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp120 Csde1 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238	16.80           16.82           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           16.99           17.00           17.02           17.03           17.05           17.08           17.10           17.11           17.11	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.11           0.53           0.53           0.56           0.58           0.77           0.81           1.10           0.86           1.03           0.57           0.70	12 11 10 12 10 12 10 12 10 12 23 17 15 10 10 11 11 11 12 12 13 10 12 13 10 11 12 13 10 11 12 13 14 15 15 15 15 15 15 15 15 15 15	Intermediate Intermediate
201048 Npas4 Gm1008 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Pfc4	16.80           16.82           16.83           16.95           16.97           16.97           16.99           16.99           16.99           17.00           17.02           17.03           17.05           17.08           17.11           17.11	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.54           0.554           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.70	12 11 10 12 10 12 10 23 17 15 10 10 11 11 11 12 11 11 12 10 11 11 12 10 11 10 12 13 10 12 12 13 10 12 12 13 10 12 12 13 10 12 12 15 16 16 17 16 17 16 16 17 16 16 17 16 16 17 16 16 17 16 16 16 16 17 16 16 16 16 16 16 16 16 16 16	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp61 Zchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1	16.80           16.82           16.83           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.99           17.00           17.02           17.03           17.05           17.08           17.10           17.11           17.11           17.14	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.11           0.53           0.56           0.58           0.77           0.81           1.10           0.86           1.03           0.57           1.07           0.70           0.52	12 11 10 12 10 12 10 12 10 12 13 15 10 10 11 11 11 12 12 13 12 13 10 12 13 12 13 14 15 10 15 10 15 10 15 10 15 15 10 15 15 10 15 15 10 15 15 15 15 15 15 15 15 15 15	Intermediate Intermediate
20048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Sp21           Gli1           Tbx20           Hnf1a           Zfp639           Gmeb2           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rfx1           NhIh1	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.03           17.05           17.07           17.08           17.11           17.14           17.15	1.02           1.28           0.97           2.22           0.053           0.71           1.13           1.08           1.01           0.66           1.10           0.66           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.52           0.83	12 11 10 12 10 12 10 12 10 12 10 12 10 11 15 10 11 11 11 12 10 11 11 11 12 10 12 13 10 11 12 13 16 11 12 16 17 10 12 17 10 10 12 17 10 10 12 17 10 10 12 17 10 10 12 17 10 10 10 10 17 10 10 10 10 17 10 10 10 10 10 10 10 10 10 10	Intermediate Intermediate
20048 20048 Mpas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb	16.80           16.82           16.83           16.95           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.99           17.00           17.02           17.03           17.05           17.07           17.08           17.10           17.11           17.14           17.16	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.11           0.53           0.56           0.53           0.56           0.58           0.77           0.81           1.01           0.86           1.03           0.57           1.07           0.70           0.52           0.83	12       11       10       12       10       12       10       12       15       10       10       11       11       12       12       12       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.03           17.05           17.11           17.11           17.14           17.15           17.16	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.70           0.52           0.83           0.98           0.62	12       11       10       12       10       12       10       12       10       11       11       11       12       10       11       11       12       12       13       10       11       12       13       10       11       12       13       14       15       16       11       13	Intermediate Intermediate
201048 201048 Mpas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tofeb Meis2 Cbec4	16.80           16.82           16.83           16.95           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.99           17.00           17.01           17.02           17.03           17.05           17.07           17.08           17.10           17.11           17.14           17.16           17.19	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.56           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.70           0.83           0.98           0.62	12       11       10       12       10       12       10       12       10       11       11       11       12       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       14	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Ccsde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bc11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 Sp2ce	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.97           16.99           16.99           17.00           17.01           17.05           17.07           17.08           17.11           17.14           17.15           17.19           17.20	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.70           0.52           0.83           0.98           0.62           0.88	12       11       10       12       10       12       10       12       10       11       11       11       12       10       11       11       12       12       13       10       11       11       12       13       13       12       13       12       13       12	Intermediate Intermediate
20048 20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179	16.80           16.82           16.83           16.95           16.97           16.97           16.98           16.97           16.98           16.99           17.00           17.01           17.02           17.03           17.04           17.05           17.10           17.11           17.12           17.16           17.20	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.66           0.53           0.56           0.56           0.57           1.03           0.57           1.07           0.70           0.83           0.98           0.62           0.88           0.54	12       11       10       12       10       12       10       12       10       11       15       10       11       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Ccsde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bc11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.05           17.08           17.10           17.11           17.15           17.19           17.20           17.20	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.70           0.52           0.83           0.98           0.62           0.88           0.54           2.06	12       11       10       12       10       12       10       12       10       11       11       11       12       10       11       11       12       12       13       10       11       13       12       13       12       13       12       12	Intermediate Intermediate
20048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zppat Zkscan14 Rhox4a Spz1 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1 Vit2	16.80           16.82           16.83           16.95           16.97           16.97           16.97           16.97           16.97           16.98           16.99           17.00           17.01           17.02           17.03           17.05           17.10           17.11           17.11           17.16           17.20           17.20           17.20	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.56           0.54           0.58           0.77           0.81           1.03           0.57           1.07           0.70           0.83           0.98           0.62           0.88           0.54           2.06	12       11       10       12       10       23       17       15       10       11       12       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       14	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp613 Ccchc4 Bcl11a Ecd Tox3 Zfp61 Zfp638 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1 Klf2 Nina2	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           16.99           17.00           17.01           17.02           17.03           17.08           17.11           17.14           17.15           17.20           17.20           17.20           17.20           17.20           17.21	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.07           0.70           0.52           0.83           0.98           0.62           0.88           0.54           2.06           1.07	12       11       10       12       10       12       10       12       10       11       11       12       10       11       11       12       12       13       10       11       12       13       10       11       12       13       10       11       12       13       12       13       14       15	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zqpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1 Klf2 Npas2	16.80           16.82           16.83           16.95           16.97           16.97           16.99           16.99           16.99           16.99           17.00           17.02           17.03           17.05           17.10           17.11           17.11           17.15           17.16           17.20           17.21           17.23	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.53           0.53           0.53           0.53           0.53           0.54           0.57           1.07           0.52           0.88           0.54           0.62           0.88           0.54           2.06           1.07           1.07           1.07           1.07	12       11       10       12       10       12       10       23       17       15       10       11       12       11       12       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       14       10	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp613 Zcchc4 Bcl11a Ecd Tox3 Zfp61 Zfp638 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1 Klf2 Npas2 Pou6f1	16.80           16.82           16.83           16.95           16.97           16.97           16.97           16.99           16.99           16.99           17.00           17.01           17.02           17.03           17.06           17.11           17.15           17.16           17.19           17.20           17.21           17.23	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.07           0.70           0.52           0.83           0.54           0.62           0.88           0.54           2.06	12       11       10       12       10       12       10       12       10       11       15       10       11       11       12       12       13       10       11       12       13       10       11       12       13       12       13       12       14       10       12	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp639 Gmeb2 Zfp63 Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1 Klf2 Npas2 Pou6f1 Nufin1	16.80           16.82           16.83           16.95           16.97           16.97           16.99           16.99           16.99           16.99           17.00           17.01           17.02           17.03           17.05           17.11           17.16           17.20           17.20           17.20           17.21           17.23           17.23	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.56           0.54           0.54           0.57           1.01           0.86           1.07           0.52           0.83           0.62           0.88           0.54           2.06           1.07           1.09           2.06	12       11       10       12       10       12       10       12       10       11       15       10       11       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       14	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp61 Zchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1 Klf2 Npas2 Pou6f1 Nufp1 Tfe900	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.99           16.99           16.99           16.99           17.01           17.02           17.03           17.04           17.11           17.15           17.20           17.20           17.23           17.23           17.23	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.11           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.70           0.52           0.88           0.54           0.62           0.88           0.54           2.06           1.07           1.09           2.06           1.59	12         11         10         12         10         12         10         12         10         11         15         10         11         11         12         10         11         12         12         13         11         12         13         14         10         12         14         10         12         14         10         12         14         10         12         14         10         12         14         10         12         14	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spi1           Gli1           Tbx20           Hnf1a           Zfp61           Zcochc4           Bcl11a           Ecd           Tox3           Zfp52           Gbx2           BC023179           Dcun1d1           Kif2           Nufp1           Zfp809	16.80           16.82           16.83           16.95           16.97           16.97           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.03           17.05           17.11           17.16           17.20           17.20           17.20           17.20           17.23           17.23           17.25	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.71           1.03           0.54           0.57           1.07           0.52           0.83           0.62           0.88           0.54           2.06           1.07           1.09           2.06           1.59           0.89	12       11       10       12       10       12       10       12       10       11       15       10       11       11       12       12       13       12       14       10       12	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spic           Zgpat           Zkscan14           Rhox4a           Spz1           Gli1           Tbx20           Hnf1a           Zfp120           Csde1           Zfp610           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rk1           Nhlh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Klf2           Npas2           Pou6f1           Nufp1           Zfp809           Nvf2c1	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.97           16.99           16.99           16.99           17.00           17.01           17.02           17.03           17.04           17.10           17.11           17.14           17.15           17.20           17.20           17.23           17.23           17.25           17.26	1.02           1.28           0.97           2.22           0.53           0.711           1.13           1.08           1.01           0.66           1.11           0.53           0.53           0.53           0.56           0.58           0.77           0.81           1.03           0.57           1.07           0.52           0.83           0.98           0.62           0.88           0.54           2.06           1.09           2.06           1.59           0.89           1.26	12         11         10         12         10         12         10         12         10         11         15         10         11         11         12         13         12         13         14         10         11         12         13         10         11         12         10         11         12         10         11         11         12         10         11         12         10         11         11         12         10         11         11         11         11         12         14         10         10         10         10         10         10         10       <	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spi1           Gli1           Tbx20           Hnf1a           Zfp61           Zfp639           Gmeb2           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rfx1           NhIh1           Tcfeb           Meis2           Gbx2           Dcun1d1           Kif2           Npas2           Pou6f1           Nuffp1           Zfp809           Nr2c1           Fiz1	16.80           16.82           16.83           16.95           16.97           16.97           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.03           17.05           17.11           17.11           17.12           17.13           17.14           17.15           17.20           17.20           17.23           17.23           17.25           17.26           17.27	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.66           0.53           0.53           0.53           0.53           0.53           0.53           0.53           0.53           0.53           0.53           0.54           0.54           0.57           1.07           0.52           0.83           0.62           0.88           0.54           2.06           1.07           1.09           2.06           1.07           1.09           2.06           1.59           0.89           1.26           0.86	12       11       10       12       10       12       10       12       10       11       15       10       11       11       12       12       10       11       12       12       13       12       13       12       13       12       13       12       14       10       12       14       10       11       12       13       13       14       10       11       12       14       10       11       18	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zapat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp20 Csde1 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhfh1 Tcfeb Meis2 Gbx2 BC023179 Dcun1d1 Klf2 Npas2 Pou6f1 Nufp1 Zfp809 Nrfzc1 Fiz1 Nufiz1 Fiz1 Fiz1 Nufiz1 Fiz1 Fiz1 Nufiz1 Fiz1 Fiz1 Fiz1 Fiz1 Fiz1 Fiz1 Fiz1 F	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.97           16.99           16.99           16.99           16.99           17.00           17.01           17.02           17.03           17.04           17.10           17.10           17.11           17.14           17.15           17.20           17.20           17.20           17.23           17.23           17.25           17.26           17.26           17.26	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.11           0.53           0.53           0.56           0.58           0.77           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.52           0.83           0.98           0.62           0.88           0.54           2.06           1.59           0.89           1.26           0.86	12         11         10         12         10         12         10         12         10         11         15         10         11         12         13         12         13         12         13         12         13         12         13         12         14         10         12         14         10         12         14         10         11         12         14         10         11         12         14         10         11         12         14         10         11          12          13          14          15          16          17          18          11	Intermediate Intermediate
201048 201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp639 Gmeb2 Zfp61 Zcchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhlh1 Tcfeb Meis2 Gfbx2 BC023179 Dcun1d1 Kif2 Npas2 Pou6f1 Nufip1 Zfp809 Nr2c1 Fiz1 Neil3 Tcs44	16.80           16.82           16.83           16.95           16.95           16.97           16.97           16.99           16.99           16.99           16.99           17.01           17.02           17.03           17.05           17.10           17.11           17.13           17.14           17.15           17.20           17.20           17.23           17.25           17.26           17.26           17.26	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.07           0.52           0.83           0.54           2.06           1.59           0.89           1.26           0.86           0.76	12         11         10         12         10         12         10         12         10         11         15         10         11         11         11         12         13         12         13         12         13         12         13         12         13         12         13         12         14         10         12         14         10         118         11         12         14         10         118         11         12         14	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Ząpat           Zkscan14           Rhox4a           Spil           Gli1           Tbx20           Hnf1a           Zfp120           Csde1           Zfp61           Zchc4           Bcl11a           Ecd           Tox3           Zfp238           Rfx1           Nhlh1           Tofeb           Bc023179           Dcun1d1           Kif2           Npas2           Pou6f1           Nufp1           Zfp6090           Nr2c1           Fiz1           Neil3           Tead4	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.99           16.99           16.97           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.03           17.06           17.10           17.11           17.14           17.15           17.20           17.20           17.23           17.23           17.23           17.26           17.26           17.26           17.26           17.26	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.11           0.53           0.53           0.56           0.58           0.77           0.58           0.77           0.58           0.77           0.52           0.83           0.52           0.83           0.62           0.88           0.54           2.06           1.59           0.89           1.26           0.53	12         11         10         12         10         12         10         12         10         11         15         10         11         12         13         12         13         12         13         12         13         12         13         12         13         12         13         10         11         13         14         10         12         14         10         11         10         11         10         11         10         11         10         11         10         11         10         11         10         11         10	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Sp21           Gli1           Tbx20           Hnf1a           Zfp21           Csde1           Zfp61           Zcchc4           Bc111a           Ecd           Tox3           Zfp238           Kfx1           Nhlh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Kft2           Nufp1           Zfp809           Nr2c1           Fiz1           Neil3           Tead4           Hnf4g	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.99           16.99           16.99           16.99           17.01           17.02           17.03           17.05           17.10           17.11           17.13           17.14           17.15           17.20           17.23           17.23           17.26           17.26           17.26           17.26           17.26           17.26           17.26           17.26           17.26           17.26           17.26           17.27           17.31	1.02           1.28           0.97           2.22           0.053           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.07           0.70           0.52           0.83           0.98           0.62           0.88           0.54           2.06           1.07           1.09           2.06           1.59           0.89           1.26           0.86           0.76           0.53           0.58	12       11       10       12       10       12       10       12       10       11       15       10       11       11       11       12       10       11       11       12       13       10       12       13       12       13       12       14       10       12       14       10       11       11       11       11       12       13       14       10       11       11       10       11       11       10       11       10	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Ząpat           Zkscan14           Rhox4a           Spil           Zgp1           Zkscan14           Rhox4a           Sp21           Gli1           Tbx20           Hnf1a           Zfp120           Csde1           Zfp639           Gmeb2           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rfx1           NhIh1           Tofeb           Meis2           Gbx2           BC023179           Dcun1d1           Klf2           Npas2           Pou6f1           Nufip1           Zfp809           Nr2c1           Fiz1           Neil3           Tead4           Hnf4g	16.80           16.82           16.82           16.83           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.99           17.00           17.01           17.02           17.03           17.06           17.10           17.11           17.14           17.15           17.20           17.20           17.23           17.23           17.23           17.26           17.26           17.26           17.27           17.28	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.56           0.58           0.77           0.58           0.77           0.52           0.81           1.07           0.52           0.83           0.62           0.88           0.54           2.06           1.59           0.89           1.26           0.53           0.53           0.53	12         11         10         12         10         12         10         12         10         11         15         10         11         12         13         12         13         12         13         14         13         12         13         14         10         12         14         10         12         13         14         10         11         12         13         14         10         11         10         11         10         11         10         11         10         11         10         11         10         11         10         11         10         115	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spic           Zgpat           Zkscan14           Rhox4a           Spz1           Gli1           Tbx20           Hnf1a           Zfp120           Csde1           Zfp61           Zcchc4           Bc11a           Ecd           Tox3           Zfp238           Kfx1           Nhlh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Kf2           Npas2           Pou6f1           Nufip1           Zfp809           Nr2c1           Fiz1           Neil3           Tead4           Hnf4g           Ctcf	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.99           17.01           17.02           17.03           17.05           17.10           17.11           17.16           17.10           17.11           17.12           17.20           17.21           17.23           17.26           17.26           17.26           17.27           17.31           17.31	1.02           1.28           0.97           2.22           0.053           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.70           0.62           0.83           0.98           0.54           2.06           1.07           1.09           2.06           1.59           0.88           0.76           0.53           0.53           0.53           0.53           0.58           1.80	12         11         10         12         10         12         10         12         10         11         15         10         11         11         11         11         12         13         10         11         12         13         10         11         12         13         12         14         10         12         14         10         11         11         12         13         14         10         11         10         11         10         11         10         11         10         11         10         11         10         11         10         11         10           1	Intermediate Intermediate
201048 Npas4 Gm1008 A630042L21Rik Pou6f2 Spic Zgpat Zkscan14 Rhox4a Sp21 Gli1 Tbx20 Hnf1a Zfp120 Csde1 Zfp20 Csde1 Zfp61 Zchc4 Bcl11a Ecd Tox3 Zfp238 Rfx1 Nhln1 Tcfeb Meis2 Gbx2 Bc023179 Dcun1d1 Kif2 Npas2 Pou6f1 Nufip1 Zfp80 Nr2c1 Fiz1 Nufin1 Tcad4 Hnf4q Ctcf 2810426N06Rik Ect	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.99           16.97           16.97           16.97           16.99           16.99           16.99           17.00           17.02           17.03           17.04           17.05           17.07           17.08           17.10           17.11           17.14           17.15           17.20           17.20           17.23           17.23           17.23           17.26           17.26           17.26           17.26           17.26           17.26           17.31           17.31           17.34	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.11           0.53           0.53           0.56           0.53           0.56           0.58           0.77           0.81           1.11           0.86           1.03           0.57           1.07           0.52           0.83           0.98           0.62           0.88           0.54           2.06           1.1.09           2.06           1.59           0.88           0.89           1.26           0.86           0.76           0.53           0.58           1.80           0.68	12         11         10         12         10         12         10         12         10         11         15         10         10         11         12         13         12         13         10         12         13         10         12         13         10         12         13         10         12         13         14         10         12         14         10         11         10         12         14         10         11         10         11         10         11         10         11         10         11         10         11         10         115         10         11 <td>Intermediate Intermediate</td>	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zgpat           Zkscan14           Rhox4a           Spic           Zgpat           Zkscan14           Rhox4a           Spz1           Gli1           Tbx20           Hnf1a           Zfp120           Csde1           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rkr1           Nhlh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Ktf2           Nufip1           Zfp809           Nr2c1           Fiz1           Nei3           Tead4           Hnf4g           Ctcf           2810426N06Rik           Erf	16.80           16.82           16.82           16.83           16.95           16.95           16.97           16.99           16.99           16.99           16.99           17.01           17.02           17.03           17.05           17.07           17.08           17.10           17.11           17.15           17.20           17.20           17.23           17.23           17.26           17.26           17.26           17.27           17.31           17.34           17.35	1.02           1.28           0.97           2.22           0.053           0.71           1.13           1.08           1.01           0.53           0.71           1.13           1.08           1.01           0.53           0.53           0.53           0.53           0.54           0.58           0.77           0.81           1.03           0.57           1.07           0.70           0.52           0.83           0.57           1.07           0.70           0.62           0.88           0.54           2.06           1.26           0.86           0.76           0.53           0.58           1.80           0.68           0.75	12         11         10         12         10         12         10         12         10         11         15         10         11         11         12         10         11         12         12         13         10         11         12         13         10         11         12         13         10         12         14         10         11         11         12         13         14          10          11          12          13          14	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spil           Zkscan14           Rhox4a           Spz1           Gli1           Tbx20           Hnf1a           Zfp639           Gmeb2           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rfx1           NhIh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Kif2           Npas2           Pou6f1           Nufp1           Zfp809           Nr2c1           Fiz1           Neil3           Tead4           Hnf4g           Cltd           Z810426N06Rik           Erf           Amt2	16.80           16.82           16.82           16.82           16.83           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.97           16.99           16.99           17.00           17.01           17.02           17.03           17.04           17.05           17.07           17.08           17.10           17.11           17.14           17.15           17.20           17.20           17.23           17.23           17.23           17.26           17.26           17.26           17.26           17.31           17.34           17.35	1.02           1.28           0.97           2.22           0.053           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.54           0.54           0.57           1.01           0.86           1.07           0.52           0.83           0.62           0.88           0.54           2.06           1.07           1.09           2.06           1.59           0.88           0.76           0.53           0.58           1.80	12       11       10       12       10       12       10       12       10       11       15       10       11       11       12       13       10       11       12       13       10       11       12       13       10       11       12       13       10       12       14       10       15       10       14       18	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spic           Zapat           Zkscan14           Rhox4a           Spz1           Gli1           Tbx20           Hnf1a           Zfp120           Csde1           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rfx1           Nhlh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Klf2           Nufp1           Zfp809           Nv12c1           Fiz1           Neii3           Tead4           Hnf4g           Ctcf           Z810426N06Rik           Erf           Armt2           Bach1	16.80           16.82           16.82           16.83           16.95           16.97           16.97           16.99           16.99           16.99           16.99           17.00           17.01           17.02           17.03           17.04           17.05           17.07           17.08           17.10           17.11           17.12           17.20           17.20           17.20           17.23           17.23           17.26           17.27           17.31           17.35           17.36           17.36	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.53           0.56           0.58           0.77           0.81           1.11           0.86           0.57           1.07           0.70           0.52           0.83           0.54           0.62           0.88           0.52           0.88           0.52           0.88           0.52           0.88           0.54           2.06           1.07           1.09           2.06           1.26           0.58           0.58           1.80           0.68           0.75           1.83	12         11         10         12         10         12         10         12         10         11         15         10         11         11         12         10         11         12         12         13         10         11         12         13         10         11         12         13         10         11         12         13         10         12         14         10         12         14         10         11         12         14         10         11         11         12         14         10         15         10         14         18         9	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spi1           Zikscan14           Rhox4a           Spz1           Gli1           Tbx20           Hnf1a           Zfp619           Csde1           Zip639           Gmeb2           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zip238           Rfx1           Nhlh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Klf2           Npas2           Pou6f1           Nufp1           Zfp809           Nr2c1           Fiz1           Neil3           Tead4           Hnf4g           Clcf           28h01           Zfe612	16.80         16.82           16.82         16.83           16.95         16.95           16.97         16.97           16.99         16.97           16.99         16.99           17.01         17.01           17.02         17.03           17.05         17.07           17.08         17.08           17.11         17.11           17.12         17.20           17.20         17.20           17.23         17.23           17.25         17.26           17.23         17.25           17.26         17.26           17.31         17.35           17.36         17.36           17.36         17.36	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.66           0.53           0.54           0.58           0.77           0.81           1.11           0.86           1.07           0.57           1.07           0.52           0.83           0.62           0.88           0.54           2.06           1.07           1.09           2.06           1.17           1.09           2.06           1.07           1.09           2.06           0.76           0.53           0.58           1.80           0.62           0.75           1.83           0.69	12         11         10         12         10         12         10         12         10         12         10         11         15         10         11         11         12         13         12         13         12         13         12         13         12         14         10         15         10         14         18         9         15	Intermediate Intermediate
Z01048           Npas4           Gm1008           A630042L21Rik           Pou6f2           Spic           Zapat           Zkscan14           Rhox4a           Spic           Zapat           Zkscan14           Rhox4a           Spz1           Gli1           Tbx20           Hnf1a           Zfp120           Csde1           Zfp61           Zcchc4           Bcl11a           Ecd           Tox3           Zfp238           Rtx1           Nhlh1           Tcfeb           Meis2           Gbx2           BC023179           Dcun1d1           Klf2           Npas2           Pou6f1           Nuffp1           Zfp809           Nr2c1           Fiz1           Neil3           Tead4           Hnf4g           Clcf           Z810426N06Rik           Erf           Arnt2           Bach1           Zfp513 </td <td>16.80         16.82           16.82         16.83           16.95         16.95           16.97         16.97           16.99         16.97           16.99         16.97           16.99         16.99           17.01         17.02           17.02         17.03           17.03         17.10           17.10         17.14           17.15         17.20           17.20         17.23           17.23         17.23           17.26         17.26           17.27         17.31           17.34         17.35           17.36         17.36           17.38         17.38</td> <td>1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.56           0.58           0.77           0.81           1.11           0.86           0.77           0.70           0.52           0.83           0.54           0.52           0.83           0.54           0.52           0.83           0.54           2.06           1.07           1.07           0.52           0.54           2.06           1.09           2.06           1.26           0.76           0.53           0.58           1.80           0.68           0.75           1.83           0.60           0.58  </td> <td>12         11         10         12         10         12         10         12         10         11         15         10         11         11         12         10         11         12         13         10         11         12         13         10         12         13         10         12         14         10         12         14         10         12         14         10         12         14         10         15         10         15         10         14         18         9         15         10         15         16</td> <td>Intermediate Intermediate</td>	16.80         16.82           16.82         16.83           16.95         16.95           16.97         16.97           16.99         16.97           16.99         16.97           16.99         16.99           17.01         17.02           17.02         17.03           17.03         17.10           17.10         17.14           17.15         17.20           17.20         17.23           17.23         17.23           17.26         17.26           17.27         17.31           17.34         17.35           17.36         17.36           17.38         17.38	1.02           1.28           0.97           2.22           0.53           0.71           1.13           1.08           1.01           0.66           1.10           0.53           0.53           0.53           0.56           0.58           0.77           0.81           1.11           0.86           0.77           0.70           0.52           0.83           0.54           0.52           0.83           0.54           0.52           0.83           0.54           2.06           1.07           1.07           0.52           0.54           2.06           1.09           2.06           1.26           0.76           0.53           0.58           1.80           0.68           0.75           1.83           0.60           0.58	12         11         10         12         10         12         10         12         10         11         15         10         11         11         12         10         11         12         13         10         11         12         13         10         12         13         10         12         14         10         12         14         10         12         14         10         12         14         10         15         10         15         10         14         18         9         15         10         15         16	Intermediate Intermediate

Chroat	17 47	0.04	110	Intermediate
Chiaci	17.47	0.64	12	Internediate
Fos	17.49	1.26	8	Intermediate
Foxp1	17 51	2 13	10	Intermediate
Aradi	47.54	1 40	10	Interrestists
Arnti	17.51	1.42	11	Intermediate
Zfp7	17.52	1.18	8	Intermediate
7fn210	17 54	1 40	17	Intermediate
760704	47.54	1.73	10	Interrestists
ZIP704	17.54	1.50	12	Internediate
lsx	17.55	0.67	12	Intermediate
Eozf2	17 55	1 1/	0	Intermediate
	17.55	0.00	9	Interneulate
Hesx1	17.60	0.68	8	Intermediate
Alx4	17.61	2.18	13	Intermediate
7000010	17.01	0.61	10	Intermediate
Zscanto	17.01	0.01	13	Internediate
Nr4a1	17.62	0.72	13	Intermediate
BC043301	17.62	0.92	12	Intermediate
117	47.00	4.00	4.4	late and a diate
Hes/	17.66	1.03	14	Intermediate
Tbx19	17.67	0.54	11	Intermediate
Foxi2	17.67	1 51	14	Intermediate
D INO	17.07	1.01	14	Internediate
Ddit3	17.68	0.60	14	Intermediate
Msan1	17.70	2.33	16	Intermediate
Pav3	17 70	2 4 1	8	Intermediate
7 10	17.70	2.71		Internediate
Zmat2	17.71	1.15	11	Intermediate
Rhox6	17.71	1.86	11	Intermediate
Sp2	17 71	1.57	10	Intermediate
Sh2	17.71	1.37	10	Interneulate
Ep300	17.73	0.72	10	Intermediate
Zscan2	17 74	1 14	14	Intermediate
A020022140D3	47.70	1.00	10	Interres-list-
AOJUUZJITZRIK	17.76	1.09	13	intermediate
Tbx15	17.78	0.90	14	Intermediate
Thy22	17 78	2 16	10	Intermediate
75.40	17.70	2.10	10	interneulate
Ztp12	17.80	0.72	11	Intermediate
Zfp358	17.81	1.49	11	Intermediate
Ctf3a	17.96	0.85	11	Intermodiate
Glija	00.11	0.00	11	mennediate
Adnp2	17.89	0.70	11	Intermediate
Ear1	17 89	1 15	9	Intermediate
76.05 4	17.00	1.10	10	Internediate
∠ιρఠэ-r\$1	17.92	0.98	10	intermediate
Zfp46	17.93	0.88	11	Intermediate
I hy3	17 02	1 47	13	Intermediate
LIIX3	17.95	1.47	13	Interneulate
Smarcc1	17.97	0.96	11	Intermediate
Usf1	18.00	1.76	12	Intermediate
Polh	18.00	0.80	12	Intermodiate
ReiD	10.01	0.69	13	intermediate
Fosl2	18.05	1.16	25	Intermediate
Mycn	18.06	0.59	16	Intermediate
iviyon	10.00	0.55	10	Interneulate
Jazt1	18.10	1.09	11	Intermediate
Bmvc	18.10	1.26	5	Intermediate
7000001	10.10	1.20	10	Intermediate
ZSCATIZ I	10.11	1.57	10	Internediate
Klf5	18.12	1.09	10	Intermediate
Far2	18 13	0 54	17	Intermediate
	40.44	0.07	4.4	linterine diate
HOXD5	18.14	0.67	14	Intermediate
Zfp14	18.16	0.81	12	Intermediate
Tec22d3	18 16	1 40	14	Intermediate
1302200	10.10	0.70	14	Internediate
tct/	18.17	0.73	10	Intermediate
Esr2	18.18	1.25	11	Intermediate
Drov11	10 10	1.00	11	Intermediate
	10.10	1.00	11	Interneulate
Batf2	18.19	1.10	10	Intermediate
Tcfcn2l1	18 22	0.86	13	Intermediate
Coll4	10.22	1 11	14	Intermediate
58114	10.23	1.11	14	Internediate
Churc1	18.28	0.44	11	Intermediate
Zfp689	18 29	0.86	12	Intermediate
Minf	10.20	1.00	10	Intermediate
MIZT	18.30	1.32	10	Intermediate
Snai3	18.30	1.11	8	Intermediate
Zfn593	18:30	2.51	18	Intermediate
Carbon	10.00	2.01	10	Internetiate
Carnsp1	18.31	0.82	10	Intermediate
Mta1	18.35	0.61	12	Intermediate
Gtf2h2	18 37	1 51	6	Intermediate
	10.07	0.70	10	
IVID03	18.38	0.76	12	Intermediate
Bloc1s1	18.39	1.38	10	Intermediate
Neuroa1	18.40	1 20	21	Intermediate
7:-0	10.40	1.20	40	later
2103	18.41	1.01	13	Intermediate
Mitf	18.41	0.95	12	Intermediate
l in28h	18 41	3 35	18	Intermediate
	10.41	0.00	10	interneulate
Foxn4	18.41	0.89	12	Intermediate
Hev1	18,44	1.72	13	Intermediate
7fn526	10 40	0.54	10	Informadiate
21µ020	10.40	0.54	13	intermediate
Zhx2	18.47	0.81	10	Intermediate
sox7	18 47	0.62	13	Intermediate
D2200200000	10.47	0.02	10	Interrestists
D330038006Kik	18.47	0.90	10	Intermediate
Hmgb4	18.48	0.71	11	Intermediate
7fn523	18 51	0 92	10	Intermediate
	10.01	0.32	10	later
јгк	18.52	0.86	14	Intermediate
Zfp335	18.52	0.55	10	Intermediate
Stat4	19.52	1 36	10	Intermediate
0.dl4	10.52	1.30	10	interneulate
Alx1	18.55	0.46	11	Intermediate
Tuln1	18 50	1 28	12	Intermediate
	10.00	0.70	14	Intermediate
UIX4	18.59	0.79	14	intermediate
Gabpa	18.60	2.21	13	Intermediate
7fn423	18.61	0.87	17	Intermediate
210420 T 4	10.01	0.07	17	Internetiate
loe1	18.63	1.07	15	Intermediate
Zfp629	18 65	1 07	10	Intermediate
Tfdp1	10.00	0.76	0	Intermediate
	18.67	0.70	ö	intermediate
Tcf3	18.67	1.34	10	Intermediate
Zhth5	18 67	0 90	10	Intermediate
Dhave	10.07	1 00	10	Interrestiete
R110X9	18.68	1.30	11	intermediate
Lwist2	118.70	11.06	110	Intermediate
TWICLE				

<b>T</b> 4	40.70	0.50	47	
10X4	18.72	0.56	17	Intermediate
E2f6	18.72	0.83	12	Intermediate
Eord3I	18 75	1 30	10	Intermediate
	10.75	1.39	10	Interneulate
Zbed4	18.77	1.14	13	Intermediate
Irx5	18.77	0.71	10	Intermediate
Than3	18 82	1 04	11	Intermediate
Nr4o2	10.02	1.07	10	Intermediate
NI4dZ	10.03	1.13	12	Interneulate
Prox2	18.83	1.39	24	Intermediate
Ppp1r10	18.83	1.29	11	Intermediate
Zfp42	18.85	0.83	11	Intermediate
143	18.85	2.00	11	Intermediate
103	10.00	2.99	10	Interneulate
102	18.86	1.24	12	Intermediate
Batf3	18.87	1.13	15	Intermediate
Brachvurv	18.87	1.13	15	Intermediate
Potz1	18.87	0.38	13	Intermediate
7-0-0	10.07	0.30	10	Interneulate
20308	18.91	0.49	10	Intermediate
Atf7	18.92	0.70	12	Intermediate
Sp2	18.93	1.63	5	Intermediate
Tada2l	18 94	0.80	10	Intermediate
Tto 2	10.04	1.00	10	Intermediate
Elsz	10.95	1.09	10	Intermediate
Vsx2	18.96	0.98	10	Intermediate
Zfp9	18.97	0.89	10	Intermediate
Bhlhh4	19.01	1 17	16	Intermediate
Hoyo7	10.04	2.00	15	Intermediate
	19.04	2.00	15	Interneulate
Pogz	19.06	0.89	14	Intermediate
Lhx4	19.07	1.20	13	Intermediate
Dr1	19.09	0.80	9	Intermediate
Zfn488	19 12	1.31	12	Intermediate
Eovn2	10.12	1.02	10	Intermediate
гохра	19.13	1.02	10	mennealate
PDX2	19.13	U.98	11	Intermediate
Tcf21	19.14	1.62	14	Intermediate
Zfp553	19 15	1 00	12	Intermediate
l my1h	10 15	1 75	11	Intermediate
LINA IU Droh1	10.10	0.75	15	Internetidle
Rreb1	19.16	0.75	15	Intermediate
Mta2	19.17	1.07	13	Intermediate
Smad3	19.26	1.55	13	Intermediate
Tofec	19 27	1 05	11	Intermediate
Hoya6	10.27	1 75	11	Intermediate
	19.21	1.75	10	Interneulate
Hmgzua	19.31	1.31	10	Intermediate
Stat5a	19.32	2.14	10	Intermediate
Vps72	19.32	2.14	10	Intermediate
Msc	19.33	0 70	14	Intermediate
Byra	10.25	1.07	19	Intermediate
RXIU	19.35	1.07	12	Interneulate
I rert1	19.35	1.32	12	Intermediate
Zc3h15	19.42	2.97	10	Intermediate
Zfp568	19.43	2.15	21	Intermediate
Repin1	19 49	0.87	12	Intermediate
Edf1	19.52	1 19	16	Intermediate
Dev2	10.02	1.13	14	Intermediate
RIX3	19.00	1.44	14	Internediate
Dmrt1	19.61	2.41	14	Intermediate
Mxd1	19.62	0.60	11	Intermediate
Neuroa3	19.63	1.17	11	Intermediate
Nobox	19 64	1.31	12	Intermediate
Hony	19.65	1.03	10	Intermediate
KIG0	10.00	1.00	10	Intermediate
KIIIU	19.00	1.21	11	Interneulate
EVI1	19.68	1.55	16	Intermediate
Irx4	19.70	0.88	11	Intermediate
Irf6	19.71	0.75	10	Intermediate
Nkv3-1	10.73	1.07	12	Intermediate
7fp462	10.70	1.07	10	Intermediate
210402	19.76	1.02	10	Interneulate
Uct4	19.80	1.56	15	Intermediate
Zfp131	19.81	0.61	13	Intermediate
Zfp280b	19.86	1.34	12	Intermediate
Fkhl18	19.87	0.34	12	Intermediate
Bhlhh2	19.87	1 13	13	Intermediate
0000	10.00	2.46	10	Intermedicto
50X0	19.90	2.40	12	mennealate
GIISZ	∠0.06	0.99	11	intermediate
Hoxc5	20.07	0.76	11	Intermediate
Tcfap4	20.08	2.50	10	Intermediate
Taif1	20.11	1.10	8	Intermediate
l my1a	20.13	1.80	11	Intermediate
Δ.Hf1	20.15	1.00	11	Intermediate
	20.13	1.40	11	Interneulate
iead2	20.20	1.37	12	intermediate
∠tp641	20.21	1.01	11	Intermediate
Lhx5	20.26	1.01	12	Intermediate
Six1	20.26	1.77	11	Intermediate
Klf11	20.28	1.50	11	Intermediate
Dhnil	20.31	0.55	20	Intermodicto
	20.31	0.00	20	Internetiale
ICTE3	20.32	1.43	10	Intermediate
lef1	20.32	0.96	14	Intermediate
Maz	20.39	1.86	15	Intermediate
Ptf1a	20.45	2 86	12	Intermediate
7fn33/	20.46	0.80	10	Intermediate
Lihoo4	20.40	0.00	10	Interneuidle
NII1Z	20.52	2.54	11	intermediate
Rhox12	20.53	1.15	16	Intermediate
Zfp281	20.54	0.78	15	Intermediate
Ascl2	20.59	0.62	15	Intermediate
Pnara	20.60	3 76	14	Intermediate
Neuroa2	20.60	1.66	14	Intermediate
noulogz Davi	20.09	1.00	17	Intermediate
rux1	20.98	0.04	13	intermediate
HIMGD211	∠1.03	3.81	10	intermediate
	111 06	1 11	11	Intermediate

Dity1	21 13	1.00	1/	Intermediate
	21.13	1.09	14	Interneulate
Rorc	21.17	1.56	8	Intermediate
Aatf	21.18	3.59	10	Intermediate
Otx2	21.33	1.87	6	Intermediate
Hev2	21 40	1 85	16	Intermediate
Csdc2	21.42	2.05	10	Intermediate
C3002	21.42	2.00	10	Intermediate
E213	21.42	2.20	10	Interneulate
Esrra	21.43	1.66	8	Intermediate
lrf3	21.43	1.87	16	Intermediate
Gatad2b	21.44	1.28	11	Intermediate
Rcor1	21.50	1.22	10	Intermediate
Thy3	21 50	1 72	15	Intermediate
Maxd	21.55	1.72	10	Intermediate
IVISX I	21.00	1.55	10	Intermediate
ZIC1	21.71	0.98	16	Intermediate
Pou2f2	21.76	1.27	12	Intermediate
Baz2b	21.80	0.96	12	Intermediate
Gcm2	21.86	2.22	13	Intermediate
Zfn710	21.80	1 18	10	Intermediate
NIW2 6	21.00	1.10	10	Intermediate
INKX2-0	21.09	1.32	10	Interneulate
ESITD	21.91	1.1Z	12	Intermediate
Ets1	22.05	1.76	11	Intermediate
Hoxd3	22.10	2.12	10	Intermediate
Atf3	22.27	1.19	12	Intermediate
Pias1	22 44	1 12	13	Intermediate
l by6	22.56	1.12	15	Intermediate
Dhave 10	22.30	4.33	10	Internetiate
RIIUXIU	22.59	0.93	10	mermediate
PIIX2	22.68	1.63	11	Intermediate
Cdx4	22.69	0.71	19	Intermediate
Tcfap2d	22.80	1.28	12	Intermediate
Mycs	22.80	3.34	16	Intermediate
7fn467	22.90	0.68	14	Intermediate
Lip+07	22.00	1.00	14	Intermediate
IVIYSLZ	22.92	1.93	11	memediate
Foxn3	22.94	0.87	10	Intermediate
En2	23.02	1.84	9	Enriched
Sp140	23.04	1.39	12	Enriched
Bbx	23 21	2.66	10	Enriched
Tof	23.23	1.64	7	Enriched
	23.23	1.04	1	Enriched
HOXCIU	23.27	1.20	14	Enriched
Drap1	23.46	1.06	16	Enriched
Hoxb2	23.51	1.37	11	Enriched
Nfvb	23.65	1.50	11	Enriched
DIx3	23.66	0.89	12	Enriched
Tulp4	23.68	1 72	12	Enriched
Tup4	23.00	1.72	12	Enriched
Rxra	23.76	3.98	13	Enriched
Sp4	23.82	1.48	12	Enriched
Elf1	23.83	3.59	12	Enriched
Zfp37	24.09	1.73	11	Enriched
Nfib	24.15	3.37	12	Enriched
Libtf	24.16	1.60	16	Enriched
TaifOly	24.10	0.00	10	Enriched
	24.33	0.99	13	Eninched
Gata1	24.36	2.01	13	Enriched
Zfp422	24.37	1.12	13	Enriched
Sox17	24.44	1.19	10	Enriched
Elf2	24.49	1.19	13	Enriched
Sox15	24 50	0.86	12	Enriched
Gem1	24.52	3 30	12	Enriched
Taif	24.52	1.67	12	Enriched
Tgliz	24.92	1.07	12	Ennched
Yy1	25.00	4.27	13	Enriched
Sfpi1	25.11	2.25	6	Enriched
Nfil3	25.20	2.32	10	Enriched
Hoxa9	25.49	4.86	24	Enriched
Nfia	25.64	2.50	10	Enriched
Zscan20	25.66	5.28	10	Enriched
20001120 Zacanta	20.00	5.20	10	Enriched
	23.00	0.04	10	Ennoned
INTYC	25./1	2.81	12	Enriched
Pax8	25.72	1.35	12	Enriched
Barx1	26.02	1.23	7	Enriched
Sox10	26.11	3.74	10	Enriched
Barhl2	26.24	2.72	13	Enriched
7fn524	26.31	1 95	11	Enriched
Meov2	26.85	2.56	11	Enriched
	20.00	2.00	10	Ennoned
Pht20	20.91	3.91	10	Enriched
Thra	27.02	3.38	12	Enriched
Zfp41	27.20	1.96	10	Enriched
Elk3	27.27	1.53	12	Enriched
Grhl2	27 47	3 10	18	Enriched
Flk1	27.68	1 23	8	Enriched
Envi Dhov11	20.00	1.20	14	Enriched
	∠0.∠J	1.00	14	Enriched
ILLA	28.31	1.61	10	Enriched
cbx2	28.51	4.12	13	Enriched
Six2	28.79	4.72	15	Enriched
Elf4	29.15	2.48	12	Enriched
Grhl1	29.16	6.48	10	Enriched
Ehf?	20.30	2.40	0	Enriched
	29.30	2.07	3	
в	29.36	3.61	11	Enriched
Ntkb1	30.28	3.50	16	Enriched
Pax2	30.81	1.61	16	Enriched
Nr2f6	30.92	2.84	11	Enriched
Zfp280c	31.02	4.45	10	Enriched
Than4	31.50	2 30	15	Enriched
нарт Похо2	21.50	2.00	17	Enriched
	31.31	2.09	1/	Enriched
	316/	1 (5	15	Enriched

Gata2	31.78	2.32	22	Enriched
Rfx5	32.28	5.18	16	Enriched
Fli1	32.74	2.39	11	Enriched
Gata3	32.94	1.69	10	Enriched
Mafb	33.79	3.37	11	Enriched
Rfx2	34.64	2.66	13	Enriched
Creb1	34.71	6.85	8	Enriched
1700029I01Rik	35.09	6.22	11	Enriched
Smad4	35.23	10.52	15	Enriched
Ebf1	35.57	3.25	17	Enriched
Tcfap2b	36.10	2.57	13	Enriched
Tcfap2c	36.24	3.15	11	Enriched
Cdx2	37.09	7.06	13	Enriched
Irf2	37.26	3.16	10	Enriched
Vax2	37.35	4.47	12	Enriched
Hmab2	37.49	4.21	12	Enriched
Zfp161	37.53	5.28	16	Enriched
Mbd1	38.07	5.30	11	Enriched
Hoxb13	38.55	3.34	13	Enriched
Mbd4	39.20	6.31	10	Enriched
Pou1f1	39.22	8.55	12	Enriched
hmgh3	39.94	3 37	12	Enriched
Flf5	40.02	5.03	12	Enriched
Zfn202	40.50	7.06	13	Enriched
Six6	40.68	4 30	10	Enriched
Tcfan2a	41 22	3.87	16	Enriched
Cebne	41 58	4 60	12	Enriched
Irf4	41.80	5 24	12	Enriched
L cor	42 21	4 70	14	Enriched
Jundm2	42.39	9.30	12	Enriched
Irf1	42.53	5.83	9	Enriched
Than7	42.56	4 44	11	Enriched
Pias4	43.06	4 47	12	Enriched
Hman1	43.42	4 50	12	Enriched
Hif	43.66	3.94	11	Enriched
Zfn319	44 44	6.21	11	Enriched
Duxhl	45 17	3 44	13	Enriched
Ehf3	45.82	6.75	10	Enriched
Dix1	46.38	9.04	10	Enriched
Foxa1	46.84	8 55	12	Enriched
Sox2	47 70	4 86	15	Enriched
Hman3	50.05	4 05	19	Enriched
Nr1i2	52 11	5 19	11	Enriched
hmga2	52 62	10.20	10	Enriched
Bhlhb8	55.80	4 65	13	Enriched
Tead1	56.49	9.93	12	Enriched
Dix6	58.39	6.25	22	Enriched
Srcan	58.60	9.45	12	Enriched
Max	65.00	9.62	18	Enriched
Mafa	69.70	11 22	17	Enriched
Zfn512	75.93	12.24	19	Enriched
Mafk	79.61	7 73	11	Enriched

Supplementary Table 3. Mitotic bound fraction measured in NIH-3T3 and E14 cells. Related to Supplementary Fig. 1.

Legend	Description								
Transcription	Name of the transcription factor								
Factor									
MBF in NIH-3T3	Mitotic bound	fraction measure	ed in NIH-313 ce	lls					
SEM(MBF in NIH-	Standard erro	r of the mean for	r the mitotic bour	nd fraction measu	ured in NIH-3T3				
313) m (NULL 2T2)	Cells	lle used to quest							
$\frac{11}{1100} (1000 - 313)$	Number of ce	is used to quant							
MBF IN E14 Cells	Mitotic bound	Traction measure		]					
Cells)	Standard erro	r of the mean for	r the mitotic bour	id fraction measu	ared in ES cells				
Transcription Factor	MBF in NIH- 3T3 [%]	SEM(MBF in NIH-3T3)	n (NIH-3T3)	MBF in E14 cells [%]	SEM(MBF in E14 cells)				
Cdx4	20.5	0.4	12	22.7	0.7				
Ebf3	27.6	3.3	6	45.8	6.8				
Fam164a	14.5	0.5	10	15.1	0.6				
Hmgn1	57.9	6.9	10	43.4	4.5				
Mbd3	15.1	0.1	10	18.4	0.8				
Nobox	23.8	1.0	10	19.6	1.3				
Npas4	14.3	0.3	10	16.8	1.3				
Nr0b1	14.5	0.7	10	14.1	1.8				
Rbm22	16.3	0.5	10	16.6	0.7				
Rhox10	18.7	0.7	11	22.6	0.9				
Sox10	39.3	6.9	4	26.1	3.7				
Sox15	35.2	4.2	10	24.5	0.9				
Sox2	58.7	5.2	5	47.7	4.9				
Thap4	43.1	3.9	10	31.5	2.4				
Thap7	41.3	3.3	11	42.6	4.4				
Zfp280b	20.5	0.4	10	19.9	1.3				
Zfp280c	37.0	3.8	10	31.0	4.4				
Zfp346	16.0	0.4	10	15.0	1.6				
Zfp414	15.0	0.3	10	16.8	1.4				
Zfp809	16.9	0.5	10	17.3	0.9				

Supplementary Table 4. Parameters included in machine learning algorithm. Related to Fig. 1, Supplementary Fig. 1 and Methods.

Parameters included in machine learning	Calculation / source
Charge of DBD domain	Number of positively charged AA (DBD)-number
	of negatively charged AA(DBD)
Number of positively charged AA	protr (Xiao et al., 2015)
Number of negatively charged AA	protr (Xiao et al., 2015)
Number of neutral charged AA	protr (Xiao et al., 2015)
Length of the protein	Number of nucleotides
Charge of protein	Number of positively charged AA (protein)-
Difference of high minus low polar AA	number of negatively charged AA (protein)
Fraction of AA with high minus fraction of low VDW interactions	protr (Xiao et al., 2015)
Difference of AA with high minus low VDW	Total VDW fraction*Length
Interactions	Number of domoins found
	Number of domains found
Absolute charge of DBD domain per number of DBD	DBDCharge/DomainNbr
Fraction of phosphorylable AA (S, T, Y)	protr (Xiao et al., 2015)
Fraction of methylable AA (K, R)	protr (Xiao et al., 2015)
Dispersion of positive charges	Index of dispersion of positive charges in the
	protein (variance/mean)
Fraction of AA with a tendency to form helix structures	protr (Xiao et al., 2015)
Fraction of AA with a tendency to form strand	protr (Xiao et al., 2015)
Fraction of AA with a tendency to form coil	protr (Xiao et al. 2015)
structures	
Fraction of positive AA (K, R, H)	Lee et al., 2009
Fraction of aromatic AA (F, W, Y, H)	Lee et al., 2009
Fraction of polar AA (R, K, E, D, Q, N)	Lee et al., 2009
Fraction of hydrophobic AA (C, L, V, I, M, F, W)	Lee et al., 2009
Fraction of aliphatic AA (A, I, L, V)	Lee et al., 2009
Fraction of tiny AA (A, G)	Lee et al., 2009
Fraction of bulky AA (F, H, R, W, Y)	Lee et al., 2009
Fraction of small AA (A, G, S, T)	Lee et al., 2009
Sum of gravy coefficient	Lee et al., 2009
Number of continuous changes from positively	Lee et al., 2009
charged AA to positively charged AA	
Number of continuous changes from uncharged	Lee et al., 2009
AA to uncharged AA	
charged AA to negatively charged AA	
Number of positively charged AA clusters	Sum of clusters of more than 2 consecutive
	positively charged AA

Number of uncharged AA clusters	Sum of clusters of more than 2 consecutive uncharged AA
Number of negatively charged AA clusters	Sum of clusters of more than 2 consecutive
	negatively charged AA
Fraction of disordered domain in the protein	Sum of ANCHOR scores / Length of the protein
	(Dosztnyi et al., 2009)
Number of AA in disordered domains	Sum of ANCHOR scores (Dosztnyi et al., 2009)
DBD bZIP	UNIPROT database
DBD bHLH	UNIPROT database
DBD C2H2 zinc finger	UNIPROT database
DBD HMG	UNIPROT database
DBD Nuclear receptors with C4 zinc fingers	UNIPROT database
DBD T Box	UNIPROT database
DBD C2HC zinc finger	UNIPROT database
DBD SMAD NF1 DBD	UNIPROT database
DBD DM type intertwined zinc finger	UNIPROT database
DBD Homeo domain	UNIPROT database
DBD Tryptophan cluster	UNIPROT database
DBD C3H zinc finger	UNIPROT database
DBD TEA domain	UNIPROT database
DBD Fork head winged helix	UNIPROT database
DBD RHR	UNIPROT database
DBD Heteromeric CCAAT binding	UNIPROT database
DBD Other C4 zinc finger type	UNIPROT database
DBD GCM domain	UNIPROT database
DBD ARID domain	UNIPROT database
DBD Grainyhead domain	UNIPROT database
DBD MADS box	UNIPROT database
DBD Cold shock domain	UNIPROT database
DBD CXXC zinc finger	UNIPROT database
DBD C2CH THAP type zinc finger	UNIPROT database

Supplementary Table 5. Correlation between Hoechst and YPet signals in the whole cell, in heterochromatin, DNA-rich, and DNA-poor regions. Related to Fig. 2.

Legend	Description
Transcription Factor	Name of the transcription factor
Pixel_Corr_HoechstYpet	Pixel by pixel correlation between Hoechst and YPet signals (whole cell)
SEM_Pixel_Corr_HoechstYpet	Standard error of the mean for the pixel by pixel correlation between Hoechst and YPet signals
Heterochromatin	Correlation between Hoechst and YPet signals in heterochromatin
SEM_Heterochromatin	Standard error of the mean for the correlation between Hoechst and YPet signals in heterochromatin
DNA-rich	Correlation between Hoechst and YPet signals in DNA-rich regions
SEM_DNA-rich	Standard error of the mean for the correlation between Hoechst and YPet signals in DNA-rich regions
DNA-poor	Correlation between Hoechst and YPet signals in DNA-poor regions
SEM_DNA-poor	Standard error of the mean for the correlation between Hoechst and YPet signals in DNA-poor regions

Transcription Factor	Pixel_Corr_HoechstYpet	SEM_Pixel_Corr_HoechstYpet	Heterochromatin	SEM_Heterochromatin	DNA-rich	SEM_DNA-rich	DNA-poor	SEM_DNA-poor
Atf3	0.56	0.06	0.17	0.02	0.27	0.01	0.56	0.04
Bhlhb8	0.76	0.02	0.19	0.01	0.34	0.01	0.47	0.01
Brachyury	0.36	0.05	0.08	0.01	0.34	0.01	0.58	0.02
CDX2	0.39	0.06	0.05	0.00	0.39	0.01	0.57	0.02
Dlx1	0.53	0.04	0.12	0.00	0.37	0.01	0.51	0.03
DIx6	0.70	0.02	0.20	0.01	0.34	0.00	0.46	0.01
Duxbl	0.84	0.02	0.28	0.01	0.30	0.01	0.42	0.02
Ebf1	0.35	0.04	0.05	0.00	0.38	0.01	0.58	0.02
Foxa1	0.16	0.08	0.05	0.00	0.39	0.02	0.56	0.02
Gata5	0.30	0.06	0.07	0.00	0.31	0.01	0.62	0.04
Hes3	0.36	0.06	0.07	0.01	0.27	0.01	0.66	0.03
HIf	0.13	0.07	0.05	0.01	0.31	0.01	0.65	0.02
Hmga2	0.77	0.02	0.19	0.00	0.27	0.00	0.54	0.03
Hmgb2	0.80	0.02	0.17	0.01	0.29	0.00	0.54	0.02
Hmgn1	0.71	0.02	0.14	0.01	0.36	0.00	0.50	0.01
Hoxd10	0.39	0.05	0.11	0.02	0.31	0.01	0.58	0.03
Mafg	0.57	0.05	0.21	0.01	0.33	0.00	0.46	0.02
Mafk	0.62	0.06	0.24	0.01	0.33	0.01	0.43	0.02
Max	0.61	0.05	0.08	0.01	0.40	0.00	0.52	0.02
Nanog	0.33	0.05	0.09	0.01	0.32	0.01	0.59	0.02
Nr1i2	0.18	0.04	0.07	0.01	0.30	0.01	0.63	0.01
Pax2	0.04	0.03	0.07	0.01	0.32	0.01	0.61	0.02
Pias4	0.53	0.04	0.12	0.01	0.38	0.01	0.51	0.02
Pou1f1	0.33	0.07	0.12	0.01	0.36	0.00	0.52	0.02
Oct4	0.61	0.03	0.15	0.01	0.35	0.00	0.50	0.03
Prr3	0.32	0.07	0.05	0.01	0.31	0.01	0.63	0.04
Rhox11	0.37	0.08	0.08	0.00	0.31	0.01	0.61	0.03
Six6	0.39	0.06	0.12	0.01	0.34	0.01	0.54	0.01
Sox15	0.49	0.04	0.10	0.01	0.39	0.01	0.51	0.02
Sox2	0.35	0.05	0.07	0.00	0.38	0.00	0.55	0.02
Srcap	0.71	0.03	0.16	0.01	0.33	0.01	0.52	0.01
Tcfec	0.41	0.06	0.14	0.06	0.30	0.01	0.56	0.06
Tead1	0.86	0.01	0.26	0.02	0.33	0.00	0.41	0.02
Thap4	0.37	0.05	0.05	0.00	0.37	0.02	0.58	0.02
Tox3	0.36	0.06	0.04	0.00	0.31	0.01	0.65	0.04
Zfp131	0.26	0.07	0.05	0.00	0.27	0.01	0.68	0.05
Zfp319	0.34	0.05	0.09	0.01	0.36	0.02	0.56	0.02
Zmat2	0.43	0.07	0.08	0.00	0.23	0.01	0.68	0.03

Supplementary Table 6. Half-times of FRAP recovery in mitosis and interphase cells and predicted molecular weight. Related to Fig. 3 and Supplementary Fig. 2.

Legend	Description
Transcription Factor	Name of the transcription factor
FRAP t1/2 recovery time inter.	Interphase half time of fluorescence recovery
SEM FRAP t1/2 recovery time inter.	Standard error of the interphase half time of fluorescence recovery
FRAP t1/2 recovery time meta.	Mitotic half time of fluorescence recovery
SEM FRAP t1/2 recovery time meta.	Standard error of the mitotic half time of fluorescence recovery
FRAP immobile fraction inter.	Interphase FRAP immobile fraction
SEM FRAP immobile fraction inter.	Standard error of the interphase FRAP immobile fraction
FRAP immobile fraction mitosis	Mitotic FRAP immobile fraction
SEM FRAP immobile fraction	Standard error of the mitotic FRAP immobile fraction
mitosis	
Predicted Molecular Weight	Predicted Molecular Weight, based on protein and YPet tag amino
[kDa]	acid sequence

Transcri ption Factor	FRAP t1/2 recovery time inter. [s]	SEM FRAP t1/2 recovery time inter.	FRAP t1/2 recovery time meta. [s]	SEM FRAP t1/2 recovery time meta.	FRAP immobile fraction inter.	SEM FRAP immobile fraction inter.	FRAP immobile fraction mitosis	SEM FRAP immobile fraction mitosis	Predicted Molecular Weight [kDa]
BHLHB8	10.82	1.03	13.48	1.66	0.08	0.03	0.09	0.02	51.78
BRACHY URY	4.20	0.45	NA	NA	0.09	0.03	NA	NA	77.08
CDX2	14.03	1.09	7.78	0.93	0.21	0.02	0.18	0.03	63.11
DLX6	6.91	0.75	13.25	1.71	0.10	0.03	0.05	0.01	49.22
FOXA1	6.47	0.59	3.87	0.41	0.13	0.02	0.11	0.04	78.49
HMGA2	9.18	1.23	10.59	5.57	0.11	0.04	0.12	0.05	41.45
HMGB2	7.87	1.61	1.21	0.11	0.08	0.03	0.08	0.03	53.80
HMGN1	4.57	0.58	5.40	0.64	0.10	0.01	0.04	0.02	39.78
HOXD10	3.50	0.92	1.71	0.52	0.03	0.01	0.05	0.03	67.96
MAFK	17.95	3.10	19.33	4.34	0.20	0.05	0.19	0.07	47.17
MAX	16.21	1.59	30.86	5.39	0.22	0.04	0.23	0.07	46.80
NANOG	3.55	0.40	NA	NA	0.03	0.01	NA	NA	63.88
POU5F1	5.33	0.47	4.70	1.93	0.08	0.02	0.08	0.02	67.85
SOX15	2.92	0.37	2.03	0.22	0.04	0.01	0.02	0.01	54.95
SOX2	7.68	0.80	9.97	0.60	0.12	0.03	0.19	0.04	64.04
TEAD1	8.51	1.11	4.60	0.80	0.10	0.04	0.07	0.03	76.43
THAP4	2.29	0.53	2.80	0.47	0.10	0.06	0.09	0.03	92.21
ZFP131	4.45	0.58	NA	NA	0.10	0.03	NA	NA	96.54

Supplementary Table 7. Pseudo ON-rates and relative residence times per transcription factor. Related to Fig. 3, Fig. 4 and Supplementary Fig. 3.

Legend		Description					
Transcription F	actor	Name of the transcription factor					
Heterochromat	in ΨON-rate	Pseudo on-rate	in heterochromat	tin			
DNA-rich ΨON-	-rate	Pseudo on-rate	in DNA-rich regio	ons			
DNA-poor ΨON	I-rate	Pseudo on-rate	in DNA-poor regi	ions			
Sum <b>WON-rate</b>	(total)	Sum of pseudo	on-rate over the	whole nucleus			
Average reside (Total)	nce times	Relative resider	nce time of each t	ranscription facto	r		
Transcription	Heterochrom	DNA-rich	DNA-poor	Sum ΨON-	Average		
Factor	atin ΨON-rate [A.U.]	ΨON-rate [A.U.]	ΨON-rate [A.U.]	rate (total) [A.U.]	residence times (Total)		
Eovo1	1 325 05	1 435 05			[ <b>A.U.</b> ]		
Fuxar	1.32E-05	1.432-05	1.402-05	4.21E-05	0.0047		
Nanog	1.11E-05	1.57E-05	1.96E-05	4.64E-05	8.83455		
Sox15	1.57E-05	2.01E-05	1.70E-05	5.27E-05	7.70267		
Hoxd10	1.82E-05	1.98E-05	1.98E-05	5.79E-05	7.84462		
Tead1	1.87E-05	2.29E-05	1.68E-05	5.85E-05	7.84896		
Cdx2	1.42E-05	2.66E-05	2.04E-05	6.12E-05	9.16559		
DIx6	2.59E-05	2.18E-05	1.96E-05	6.73E-05	7.98		
Sox2	2.58E-05	2.97E-05	2.17E-05	7.71E-05	7.81308		
Bhlhb8	4.59E-05	4.16E-05	2.22E-05	0.00011	7.015		

Supplementary Table 8. Number of peaks called, fraction of reads in peaks and fraction of occupied motifs in close and open genome per TF. Related to Fig. 4, Fig. 5, Supplementary Fig. 3, Supplementary Fig. 4 and Supplementary Fig. 5.

Legend	Description
Transcription Factor	Name of the transcription factor
HA_intensity	Expression levels assessed by quantitative analysis of immunofluorescence images normalized to background
MACS2	Number of peaks called with MACS2
MACS2_q0.01	Number of peaks called with MACS2 (q<0.01)
HOMER	Number of peaks called with HOMER
MACS2_downsampled	Number of peaks called with MACS2 (downsampling to 10 <sup>^7</sup> total reads for each TF)
FRiP [%]	Fraction of reads in peaks
FOM_all	Fraction of occupied top motifs
FOM_open	Fraction of occupied top motifs in open genome
FOM_closed	Fraction of occupied top motifs in closed genome
FOM_published	Fraction of occupied published motifs
FOM_published_open	Fraction of occupied published motifs in open genome
Fraction_peaks_in_closed [%]	Fraction of ChIP peaks in closed chromatin

Transcription Factor	HA_intensity [A.U.]	MACS2	MACS2_q0.01	HOMER	MACS2_downsampled	FRIP [%]	FOM_all [%]	FOM_open [%]	FOM_closed [%]	FOM_published [%]	FOM_published_open [%]	Fraction_peaks_in_closed [%]
BHLHB8_1	7.96	46842	39556	8403	5792	12.40	1.97	33.59	1.29	NA	NA	41.32
BHLHB8_2	7.96	61991	39588	15722	10359	21.49	3.50	22.73	2.17	NA	NA	62.48
BRACHYURY	3.27	720	456	25	2	0.10	0.05	0.68	0.26	0.02	2.43	22.78
CDX2	10.85	25278	18012	2793	1079	4.21	1.81	6.97	1.98	1.12	30.62	83.84
DLX1	6.56	20124	14475	1543	452	3.42	1.36	23.22	0.18	0.19	35.97	19.78
DLX6	3.05	20983	16007	4033	2034	4.98	1.55	25.34	0.14	0.23	35.11	21.11
DUXBL	4.80	24318	17292	8328	4430	5.54	7.90	8.21	7.30	7.90	65.85	78.16
EBF1	3.57	7669	6421	2894	1205	2.37	1.08	32.15	0.48	1.08	41.75	20.43
FOXA1_1	3.19	6033	4750	1406	417	1.23	0.18	20.56	0.10	NA	NA	26.14
FOXA1_2	3.19	1099	783	237	30	0.21	0.06	6.28	0.01	NA	NA	26.48
FOXA1_RR	6.31	151	101	17	6	0.03	0.01	1.58	0.02	0.00	0.38	25.17
FOXA1_SW	5.82	147	93	4	3	0.03	0.02	6.56	0.03	NA	NA	38.78
HLF	1.91	2635	1934	288	45	0.38	0.12	19.05	0.09	0.06	5.97	26.76
MAX	5.29	3836	3070	2075	655	1.21	0.31	16.84	0.15	NA	NA	27.22
NANOG	3.16	396	269	6	1	0.05	0.02	0.79	0.02	NA	NA	32.58
POU5F1_1	2.82	95	68	24	4	0.02	0.01	1.23	0.01	NA	NA	17.89
POU5F1_2	2.82	52	33	0	1	0.01	0.01	0.58	0.34	NA	NA	15.38
PRR3	3.46	62	41	1	2	0.02	0.11	7.69	0.18	NA	NA	32.26
RHOX11	1.79	4579	2833	162	28	0.62	2.66	11.18	0.08	0.05	3.49	35.60
SIX6	3.07	6075	4727	970	343	1.16	0.37	6.53	1.54	0.07	11.61	21.23
SOX15	5.03	5002	3935	1360	637	1.26	0.34	6.28	0.02	0.10	9.81	14.25
SOX2_1	3.86	25049	21918	7236	5223	7.99	1.52	30.01	0.15	NA	NA	26.14
SOX2_2	3.86	5692	4628	1844	849	1.47	0.40	7.04	0.05	NA	NA	18.10
TEAD1	3.79	14959	10606	27424	10903	9.53	NA	69.06	11.02	NA	NA	65.49
THAP4	3.31	58	40	9	5	0.02	1.74	17.65	0.11	NA	NA	27.59
TOX3	2.28	1286	1026	416	166	0.43	0.04	0.69	0.14	NA	NA	8.40
ZFP319	2.06	14645	11914	7825	4958	7.96	NA	42.20	5.72	NA	NA	78.34

Supplementary Table 9. Motifs enriched in ChIP-seq peaks for each TF. Related to Fig. 4, Supplementary Fig. 4, Supplementary Fig. 5 and methods.

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Legena	Description			
Transcription Factor	Name of the transcription factor			
Motif_all_peaks	Most highly enriched de novo motif in ChIP-seq peaks			
Motif open peaks	Most highly enriched de novo motif in ChIP-seg peaks in acc	essible regions		
Motif closed peaks	Most highly enriched de novo motif in ChIP-seg peaks in non	-accessible regions		
Published motif	Enriched published motif for the corresponding transcription t	factor or a closely related protein		
. ubiloitou_illotti				
Transcription Factor	Motif all peaks	Motif open peaks	Motif closed peaks	Published motif
BHLHB8 1	Atoh1(bHLH)/Cerebellum-Atoh1-ChIP-Seg(GSE22111)/Homer(0.946)	Atf3(bZIP)/GBM-ATF3-ChIP-Seq(GSE33912)/Homer(0.992)	MA0091.1 TAL1::TCF3/Jaspar(0.947)	Olig2(bHLH)/Neuron-Olig2-ChIP-Seg(GSE30882)/Homer
BHLHB8_2	MA0091.1_TAL1::TCF3/Jaspar(0.940)	AP-1(bZIP)/ThioMac-PU.1-ChIP-Seq(GSE21512)/Homer(0.995)	Atoh1(bHLH)/Cerebellum-Atoh1-ChIP-Seq(GSE22111)/Homer(0.967)	Olig2(bHLH)/Neuron-Olig2-ChIP-Seq(GSE30882)/Homer
BRACHYURY	AP-1(bZIP)/ThioMac-PU.1-ChIP-Seq(GSE21512)/Homer(0.987)	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.984)	PB0117.1_Eomes_2/Jaspar(0.742)	Brachyury(T-box)/Mesoendoderm-Brachyury-ChIP-exo(GSE54963)/Homer
CDX2	caudal(Homeobox)/Drosophila-Embryos-ChIP-Chip(modEncode)/Homer(0.959)	Atf3(bZIP)/GBM-ATF3-ChIP-Seq(GSE33912)/Homer(0.995)	MA0465.1_CDX2/Jaspar(0.958)	Cdx2(Homeobox)/mES-Cdx2-ChIP-Seq(GSE14586)/Homer
DLX1	Atf3(bZIP)/GBM-ATF3-ChIP-Seq(GSE33912)/Homer(0.991)	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.994)	MA0091.1_TAL1::TCF3/Jaspar(0.934)	PH0020.1
DLX6	AP-1(bZIP)/ThioMac-PU.1-ChIP-Seq(GSE21512)/Homer(0.992)	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.993)	RUNX(Runt)/HPC7-Runx1-ChIP-Seq(GSE22178)/Homer(0.971)	MA0882.1
DUXBL	MA0468.1_DUX4/Jaspar(0.962)	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.981)	MA0468.1_DUX4/Jaspar(0.903)	MA0468.1_DUX4/Jaspar(0.962)
EBF1	EBF(EBF)/proBcell-EBF-ChIP-Seq(GSE21978)/Homer(0.994)	EBF(EBF)/proBcell-EBF-ChIP-Seq(GSE21978)/Homer(0.969)	EBF(EBF)/proBcell-EBF-ChIP-Seq(GSE21978)/Homer(0.989)	EBF(EBF)/proBcell-EBF-ChIP-Seq(GSE21978)/Homer(0.994)
FOXA1_1	Foxa2(Forkhead)/Liver-Foxa2-ChIP-Seq(GSE25694)/Homer(0.972)	MA0047.2_Foxa2/Jaspar(0.974)	MA0047.2_Foxa2/Jaspar(0.974)	Foxa2(Forkhead)/Liver-Foxa2-ChIP-Seq(GSE25694)/Homer
FOXA1_2	MA0047.2_Foxa2/Jaspar(0.983)	Foxa2(Forkhead)/Liver-Foxa2-ChIP-Seq(GSE25694)/Homer(0.975)	Foxa2(Forkhead)/Liver-Foxa2-ChIP-Seq(GSE25694)/Homer(0.977)	Foxa2(Forkhead)/Liver-Foxa2-ChIP-Seq(GSE25694)/Homer
FOXA1_RR	MA0031.1_FOXD1/Jaspar(0.885)	MA0047.2_Foxa2/Jaspar(0.832)	vnd/dmmpmm(Noyes_hd)/fly(0.666)	Foxa2(Forkhead)/Liver-Foxa2-ChIP-Seq(GSE25694)/Homer
FOXA1_SW	SIP4/SIP4_SM/9-SIP4(Harbison)/Yeast(0.761)	Deaf1/dmmpmm(Bigfoot)/fly(0.668)	GAGA-repeat/Arabidopsis-Promoters/Homer(0.712)	NA
HLF	MF0006.1_bZIP_cEBP-like_subclass/Jaspar(0.903)	MF0006.1_bZIP_cEBP-like_subclass/Jaspar(0.922)	MA0025.1_NFIL3/Jaspar(0.905)	MA0043.1
MAX	MA0047.2_Foxa2/Jaspar(0.982)	MA0047.2_Foxa2/Jaspar(0.986)	MA0047.2_Foxa2/Jaspar(0.941)	NA
NANOG	RUNX-AML(Runt)/CD4+-PollI-ChIP-Seq(Barski et al.)/Homer(0.964)	RUNX2(Runt)/PCa-RUNX2-ChIP-Seq(GSE33889)/Homer(0.866)	PRDM1(Zf)/Hela-PRDM1-ChIP-Seq(GSE31477)/Homer(0.669)	NA
OCT4_1	Pit1(Homeobox)/GCrat-Pit1-ChIP-Seq(GSE58009)/Homer(0.903)	Pit1(Homeobox)/GCrat-Pit1-ChIP-Seq(GSE58009)/Homer(0.873)	Eip74EF/dmmpmm(SeSiMCMC)/fly(0.615)	Oct4(POU,Homeobox)/mES-Oct4-ChIP-Seq(GSE11431)/Homer
OCT4_2	Srebp2(bHLH)/HepG2-Srebp2-ChIP-Seq(GSE31477)/Homer(0.790)	MATA1(MacIsaac)/Yeast(0.629)	YDR026c/YDR026c_YPD/[](Harbison)/Yeast(0.778)	Oct4(POU,Homeobox)/mES-Oct4-ChIP-Seq(GSE11431)/Homer
PRR3	Srebp1a(bHLH)/HepG2-Srebp1a-ChIP-Seq(GSE31477)/Homer(0.638)	HAP2/Literature(Harbison)/Yeast(0.640)	STAT6(Stat)/Macrophage-Stat6-ChIP-Seq(GSE38377)/Homer(0.750)	NA
RHOX11	GFY(?)/Promoter/Homer(0.953)	Elk4(ETS)/Hela-Elk4-ChIP-Seq(GSE31477)/Homer(0.985)	ovo/dmmpmm(Down)/fly(0.702)	PH0158.1_Rhox11_2/Jaspar(0.834)
SIX6	Fosl2(bZIP)/3T3L1-Fosl2-ChIP-Seq(GSE56872)/Homer(0.990)	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.993)	MA0426.1_YHP1/Jaspar(0.715)	PB0059.1
SOX15	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.990)	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.988)	Sox2(HMG)/mES-Sox2-ChIP-Seq(GSE11431)/Homer(0.956)	Sox3(HMG)/NPC-Sox3-ChIP-Seq(GSE33059)/Homer
SOX2_1	Atf3(bZIP)/GBM-ATF3-ChIP-Seq(GSE33912)/Homer(0.992)	Atf3(bZIP)/GBM-ATF3-ChIP-Seq(GSE33912)/Homer(0.991)	Sox3(HMG)/NPC-Sox3-ChIP-Seq(GSE33059)/Homer(0.976)	Sox3(HMG)/NPC-Sox3-ChIP-Seq(GSE33059)/Homer
SOX2_2	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.993)	Fra1(bZIP)/BT549-Fra1-ChIP-Seq(GSE46166)/Homer(0.993)	Sox3(HMG)/NPC-Sox3-ChIP-Seq(GSE33059)/Homer(0.966)	Sox3(HMG)/NPC-Sox3-ChIP-Seq(GSE33059)/Homer
TEAD1	SeqBias: CG-repeat(0.787)	PHD1/PHD1_BUT90/8-SUT1(Harbison)/Yeast(0.781)	PB0095.1_Zfp161_1/Jaspar(0.804)	NA
THAP4	SPL14(SBP)/Arabidopsis thaliana/AthaMap(0.776)	PB0086.1_Tcfap2b_1/Jaspar(0.747)	twi/dmmpmm(Papatsenko)/fly(0.741)	NA
TOX3	AP-1(bZIP)/ThioMac-PU.1-ChIP-Seq(GSE21512)/Homer(0.978)	AP-1(bZIP)/ThioMac-PU.1-ChIP-Seq(GSE21512)/Homer(0.969)	br-Z1/dmmpmm(Bigfoot)/fly(0.662)	NA
ZFP319	SeqBias: GA-repeat(0.900)	Trl/dmmpmm(Down)/fly(0.905)	Trl/dmmpmm(Down)/fly(0.852)	NA

Supplementary Table 10. Number and fraction of TF ChIP-seq peaks and ATAC-seq peaks with changed chromatin accessibility per TF. Related to Fig. 5 and Supplementary Fig. 5.

Legend	Description
Transcription Factor	Name of the transcription factor
nrpeaks_merged	Number of merged ChIP-seq peaks
TFsites_changed	Number of ChIP-seq peaks with changed chromatin accessibility
TFsites_up	Number of ChIP-seq peaks with increased chromatin accessibility
TFsites_down	Number of ChIP-seq peaks with decreased chromatin accessibility
TFsites_fraction_changed	Fraction of TF peaks with changed accessibility
TFsites_fraction_up	Fraction of TF peaks with increased accessibility
TFsites_fraction_down	Fraction of TF peaks with decreased accessibility
ATACsites_changed	Number of ATAC-seq peaks with changed chromatin accessibility
ATACsites_up	Number of ATAC-seq peaks with increased chromatin accessibility
ATACsites_down	Number of ATAC-seq peaks with decreased chromatin accessibility

Transcription Factor	nrpeaks_merged	TFsites_changed	TFsites_up	TFsites_down	TFsites_fraction_changed [%]	TFsites_fraction_up [%]	TFsites_fraction_down [%]	ATACsites_changed	ATACsites_up	ATACsites_down
BHLHB8	82754	11	7	4	0.01	0.01	0.00	7	6	1
BRACHYURY	708	1	1	0	0.14	0.14	0.00	12	11	1
CDX2	25190	11652	11418	234	46.26	45.33	0.93	26937	16162	10775
DLX6	20563	11	11	0	0.05	0.05	0.00	22	18	4
DUXBL	24265	303	7	296	1.25	0.03	1.22	1280	315	965
FOXA1	6201	783	726	57	12.63	11.71	0.92	7913	5539	2374
HLF	2601	0	0	0	0.00	0.00	0.00	2	2	0
NANOG	383	1	1	0	0.26	0.26	0.00	5	4	1
POU5F1	116	0	0	0	0.00	0.00	0.00	8	8	0
RHOX11	4533	14	4	10	0.31	0.09	0.22	3374	2322	1052
SIX6	5976	94	1	93	1.57	0.02	1.56	249	73	176
SOX15	4934	2	2	0	0.04	0.04	0.00	57	51	6
SOX2	25045	1849	1704	145	7.38	6.80	0.58	7438	5549	1889

## Supplementary Table 11. Primers used for PCR cloning

Construct	Primer name	Sequence
	Gbx2-F	5'-ggggacaagtttgtacaaaaaagcaggcaccatgagcgcagcgttcc-3'
GDX2 PENTR	Gbx2-R	5'-ggggaccactttgtacaagaaagctgggtcgggtcgggcctgctc-3'
	Klf2-F	5'-ggggacaagtttgtacaaaaaagcaggcaccatggcgctcagcgagc-3'
KIIZ PENTR	Klf2-R	5'-ggggaccactttgtacaagaaagctgggtccatgtgtcgcttcatgtgc-3'
	Klf4-F	5'-ggggacaagtttgtacaaaaaagcaggcaccatgaggcagccacctgg-3'
KII4 PENTR	Klf4-R	5'-ggggaccactttgtacaagaaagctgggtcaaagtgcctcttcatgtgtaagg-3'
	Klf5-F	5'-ggggacaagtttgtacaaaaaagcaggcaccatgcccacgcgggtg-3'
KIID PENTR	Klf5-R	5'-ggggaccactttgtacaagaaagctgggtcgttctggtggcgcttcat-3'
	Nanog-F	5'-ggggacaagtttgtacaaaaaagcaggcaccatgagtgtgggtcttcctgg-3'
Nallog PENTR	Nanog-R	5'-ggggaccactttgtacaagaaagctgggtctatttcacctggtggagtcaca-3'
sov17 nENITD	sox17-F	5'-ggggacaagtttgtacaaaaaagcaggcaccatgagcagcccggatg-3'
	sox17-R	5'-ggggaccactttgtacaagaaagctgggtcaatgtcggggtagttgcaat-3'
Tof3 nENITR	Tcf3-F	5'-ggggacaagtttgtacaaaaaagcaggcaccatgccccagctcggtg-3'
	Tcf3-R	5'-ggggaccactttgtacaagaaagctgggtcgtgggcagacttggtgacc-3'
FoxA1_SW	FoxA1SWmut-F	5'-ccaggcaagggcgcctacgcgacgctgcaccc-3'
FoxA1_RR	FoxA1RRmut-F	5'-cggctgctacttgcgcgcccaaaaggccttcaagtgtgagaag-3'
YPet-NLS (all)	YPet-NLS-F	5'-tttgtcgacatggtgagcaaaggcgaa-3'
NLS(RKRKR)	YPet-RKRKR-R	5'-tttcatatgttatctcttccgttttcgcttatagagctcgttcatgcc-3'
YPet-RRRRR	YPet-RRRRR-R	5'-tttcatatgttaccttctcctgcgcctcttatagagctcgttcatgcc-3'
YPet-RKARKR	YPet-RKARKR- R	5'-tttcatatgttatctcttccgagcttttcgcttatagagctcgttcatgcc-3'
YPet-RKARKAR	YPet- RKARKAR-R	5'-tttcatatgttatctagccttccgagcttttcgcttatagagctcgttcatgcc-3'
YPet	YPet-R	5'-tttcatatgttacttatagagctcgttcatgcc-3'
5P OCT4	5R-OCT4-F	5'-ggggacaagtttgtacaaaaagcaggctctatgagaaggaggaggagaatggctggacacctggc-3'
5R-0014	5R-OCT4-R	5'-ggggctttgtacaagaaagctgggtcgtttgaatgcatgggagagcc-3'
5R-BRACHYURY	5R-BRA-F	5'- gggggacaagtttgtacaaaaagcaggctctatgagaaggaggaggaggaggagtgagctcgccgggcacagag- 3'
	5R-BRA-R	5'-ggggaccactttgtacaagaaagctgggtccatggatgggggtgacaca-3'
5R-NANOG	5R-NANOG-F	5'- ggggacaagtttgtacaaaaaagcaggctctatgagaaggaggaggagaatgagtgtgggtcttcctgg-3'
	5R-NANOG-R	5'-ggggaccactttgtacaagaaagctgggtctatttcacctggtggagtcaca-3'
5R-PRR3	5R-PRR3-F	5'-ggggacaagtttgtacaaaaagcaggctctatgagaaggaggaggagaatggctaacgggaagcctg- 3'
	5R-PRR3-R:	5'-ggggaccactttgtacaagaaagctgggtccagaggaggtccgttgacg-3'