

SUPPLEMENTARY TABLE 1
***S. cerevisiae* strains used in this study**

Strain Name	Genotype	Reference
BY4741	<i>MATa his3Δ1 leu2Δ0 met15Δ0 ura3Δ0</i>	GIAEVER <i>et al.</i> 2002
BY4741, <i>hos2Δ</i>	<i>MATa his3Δ1 leu2Δ0 met15Δ0 ura3Δ0 hos2ΔTkanMX</i>	GIAEVER <i>et al.</i> 2002
BY4741, <i>rad6Δ</i>	<i>MATa his3Δ1 leu2Δ0 met15Δ0 ura3Δ0 rad6ΔTkanMX</i>	GIAEVER <i>et al.</i> 2002
BY4741, <i>rrm4Δ</i>	<i>MATa his3Δ1 leu2Δ0 met15Δ0 ura3Δ0 rrm4ΔTkanMX</i>	GIAEVER <i>et al.</i> 2002
BY4741, <i>rtt109Δ</i>	<i>MATa his3Δ1 leu2Δ0 met15Δ0 ura3Δ0 rtt109ΔTkanMX</i>	GIAEVER <i>et al.</i> 2002
YPH499	<i>MATa ura3-52 lys2-801_amber ade2-101_ochre trp1-Δ63 his3-Δ200 leu2-Δ1</i>	SIKORSKI and HIETER 1989
YPH501	<i>MATa/MATα ura3-52/ura3-52 lys2-801_amber/lys2-801_amber ade2-101_ochre/ade2-101_ochre trp1-Δ63/trp1-Δ63 his3-Δ200/his3-Δ200 leu2-Δ1/leu2-Δ1</i>	SIKORSKI and HIETER 1989

SUPPLEMENTARY TABLE 2

Chromosomal Features for Logistic Regression		
Feature	Source	Range³
In Subtelomeric Region	SGD ¹	{0,1}
In Subtelomeric X repeats	SGD	{0,1}
Near Abf1p Binding Site	SGD	{0,1}
In Dubious ORFs	SGD	{0,1}
In Verified ORF	SGD	{0,1}
Within 1000bp Upstream of Verified ORFs	SGD	{0,1}
Within 1000bp Downstream of Verified ORFs	SGD	{0,1}
In Uncharacterized ORFs	SGD	{0,1}
In a Polymerase I Transcribed Gene Exon	SGD	{0,1}
In a Polymerase I Transcribed Gene Intron	SGD	{0,1}
In a Polymerase III Transcribed Gene	SGD	{0,1}
In a tRNA Gene	SGD	{0,1}
In an endogenous Ty LTR Sequence	SGD	{0,1}
In an endogenous Ty Element	SGD	{0,1}
In a Predicted Autonomously Replicating Sequence (ARS)	SGD	{0,1}
Within 1000bp Upstream of Predicted ARS	SGD	{0,1}
Within 1000bp Downstream of Predicted ARS	SGD	{0,1}
In Subtelomeric Y' Element	SGD	{0,1}
Within 1000bp Upstream of Polymerase III Transcribed Gene	SGD	{0,1}
Within 1000bp Downstream of Polymerase III Transcribed Gene	SGD	{0,1}
Within 1000bp Upstream of tRNA Gene	SGD	{0,1}
Within 1000bp Downstream of tRNA Gene	SGD	{0,1}
Near YAP6 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near MSN2 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near MSN4 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near PHO2 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near FHL1 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near ABF1 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near DIG1 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near SWI4 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near SWI5 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near SWI6 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near FKH1 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near FKH2 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near ACE2 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near AFT2 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near DIG1 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}
Near BAS1 Transcription Factor Binding Site	MacIsaac et al. (2006)	{0,1}

Near MOT3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near NRG1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near DAL82 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near CBF1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SUT1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near INO2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near UME6 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RTG3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GCN4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near PHD1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RAP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SUM1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MCM1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near CIN5 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YAP5 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MOT3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near NRG1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near CBF1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RTG3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near STP4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GLN3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GCR1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GCR2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ROX1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near TYE7 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near STE12 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SNT2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SPT2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near REB1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near TEC1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near DAL80 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ADR1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MAC1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ARR1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YAP7 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MET31 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MET32 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MET4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RME1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near HSF1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SFP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near STP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RCS1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}

Near MBP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YOX1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YHP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near INO4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near HAP5 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near HAP2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near HAP4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SKN7 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SPT23 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ARG80 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ARG81 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near PUT3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near HAP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SOK2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near XBP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YAP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near LEU3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SKO1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RPN4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near CST6 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near CAD1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near PDR3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RGT1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near IME1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RDS1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GAL4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GAL80 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GZF3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near HAP3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near STB4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GTS1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ASH1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near NDD1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near THI2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near PHO4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near STB2 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YDR520C Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RLM1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GAT1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near AZF1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MATA1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near CHA4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near OPI1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}

Near STB1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near STB5 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RFX1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near HAC1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near GAT3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RPH1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SNF1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near PDR1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near IXR1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near MIG1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YRR1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SIP4 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near SMP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near DAL81 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near UGA3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ARO80 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RLR1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YML081W Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near ZAP1 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near YAP3 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near RIM101 Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Near Any Transcription Factor Binding Site	Maclsaac et al. (2006)	{0,1}
Nucleosome ChIP Weights	Lee et al. (2007)	$(-\infty, \infty)$
Nucleosome Hidden Markov Model Calls	Lee et al. (2007)	{0,1,2}
DNase Sensitivity	Hesselberth et al. (2009)	$(-\infty, \infty)$
In a Predicted Autonomously Replicating Sequence (ARS)	OriDB ²	{0,1}
Within 1000bp Upstream of Confirmed ARS	OriDB	{0,1}
Within 1000bp Downstream of Confirmed ARS	OriDB	{0,1}
H4 Acetylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$
H3K9 Acetylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$
H3K14 Acetylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$
H3K36me3 Methylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$
H3K4me1 Methylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$
H3K4me2 Methylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$
H3K4me3 Methylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$
H3K79me3 Methylation Weight	Pokholok et al. (2005)	$(-\infty, \infty)$

¹ SGD is the Saccharomyces Genome Database found at www.yeastgenome.org.

² OriDB is the DNA Replication Origin Database found at www.oridb.org.

³ {a, b, c, ...} represents a set of discrete possible values. {0,1} indicates a binary feature (either in feature or not in feature); (a, b) represent a range of continuous values, excluding endpoints, between 'a' and 'b'; [a,b) represents a range of continuous values, square brackets indicate that an endpoint is included in the set.