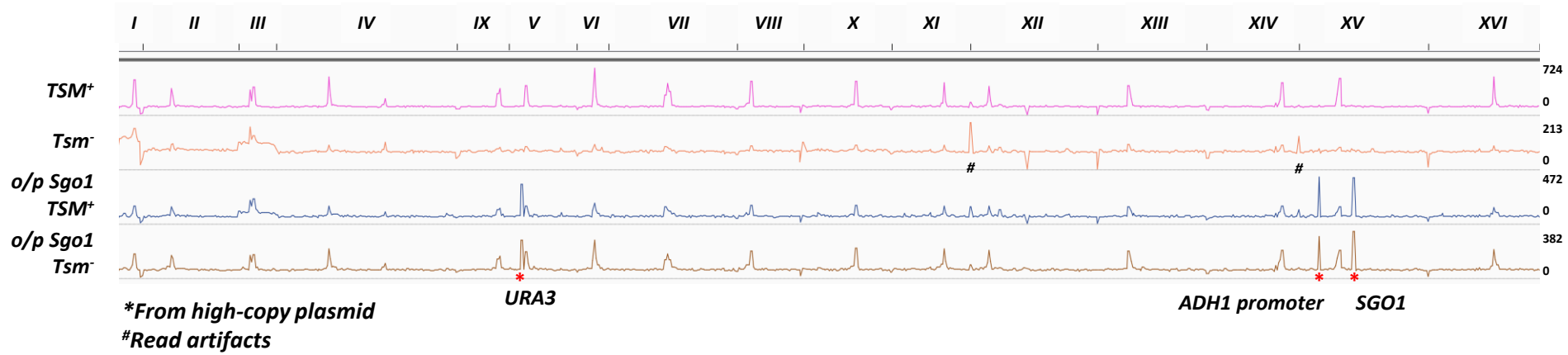
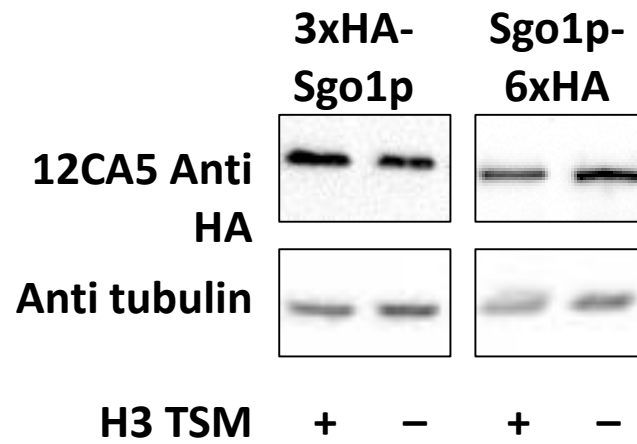


Supplemental Figure 1

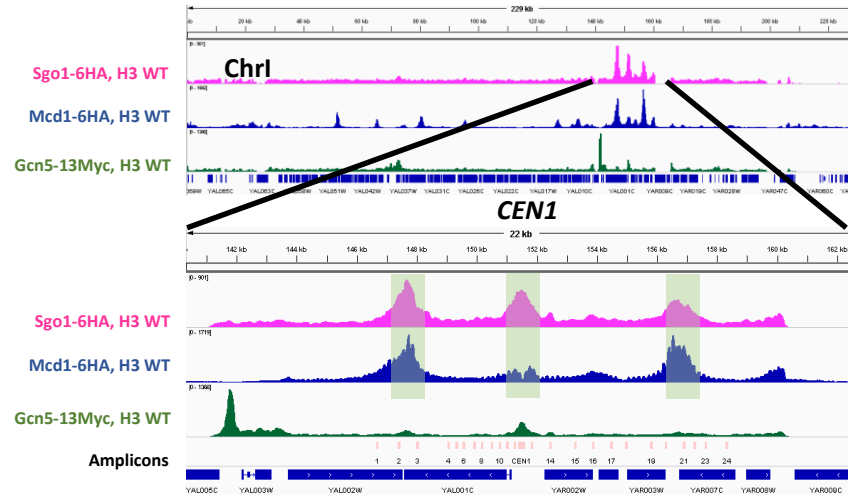


B

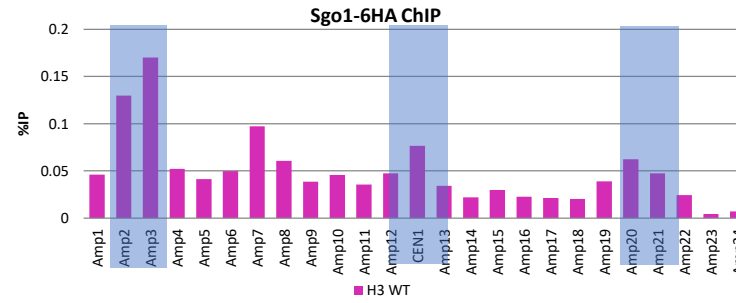


Supplemental Figure 2

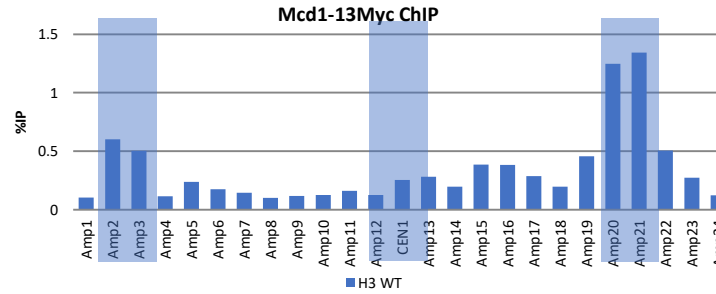
A



B

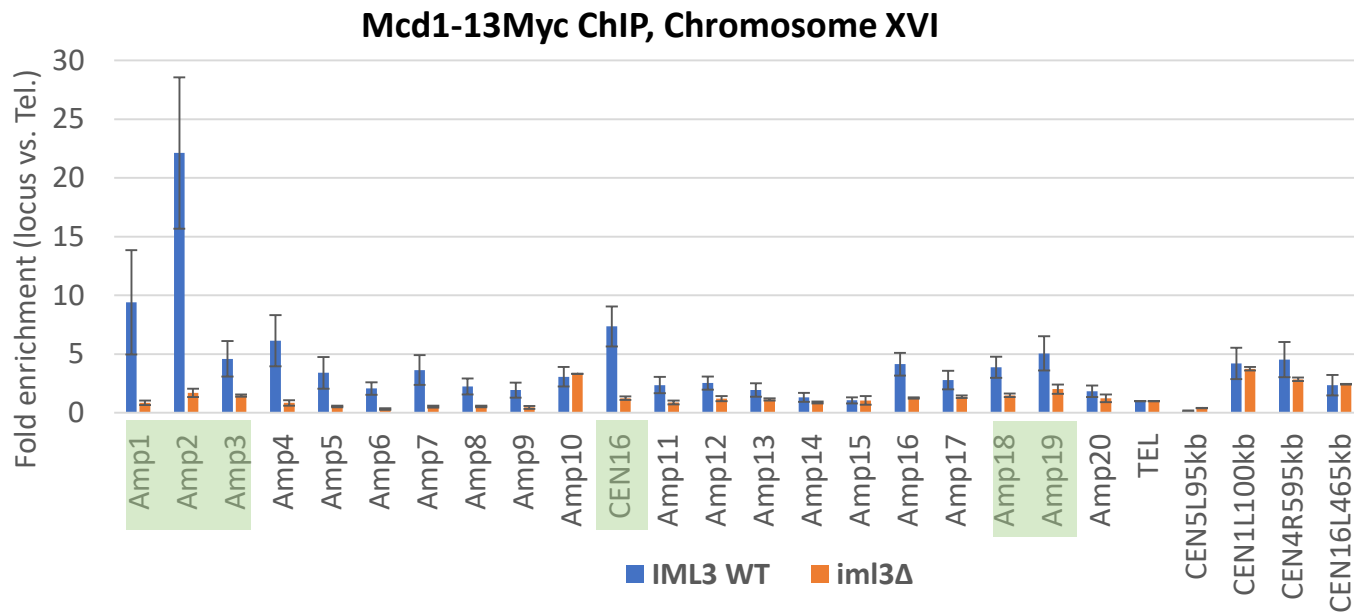


C

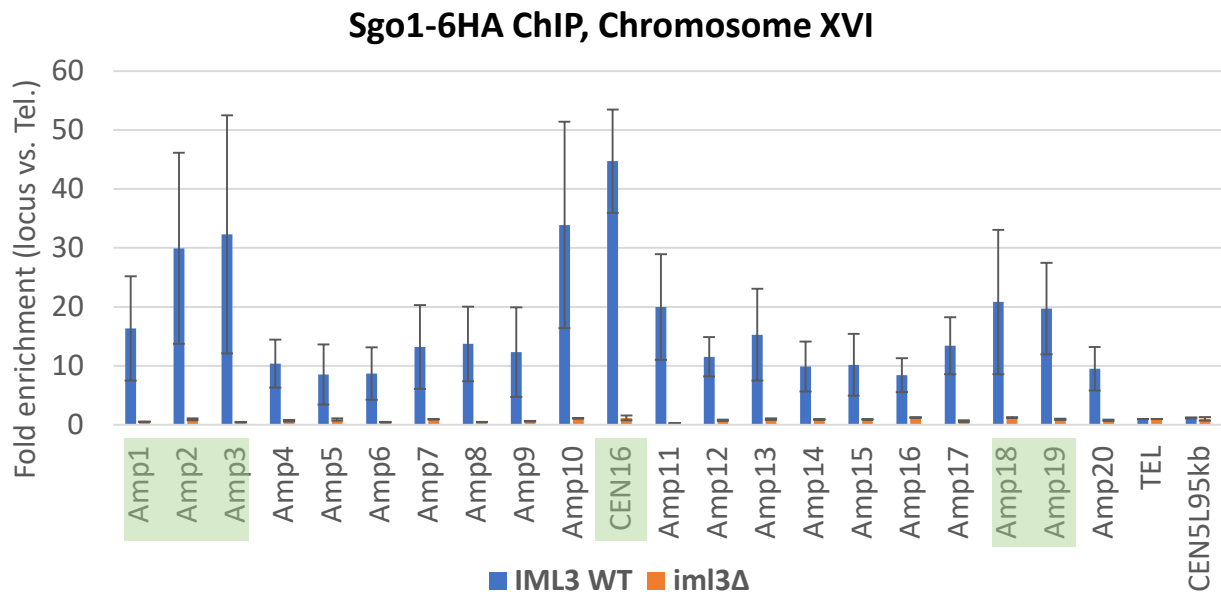


Supplemental Figure 3

A

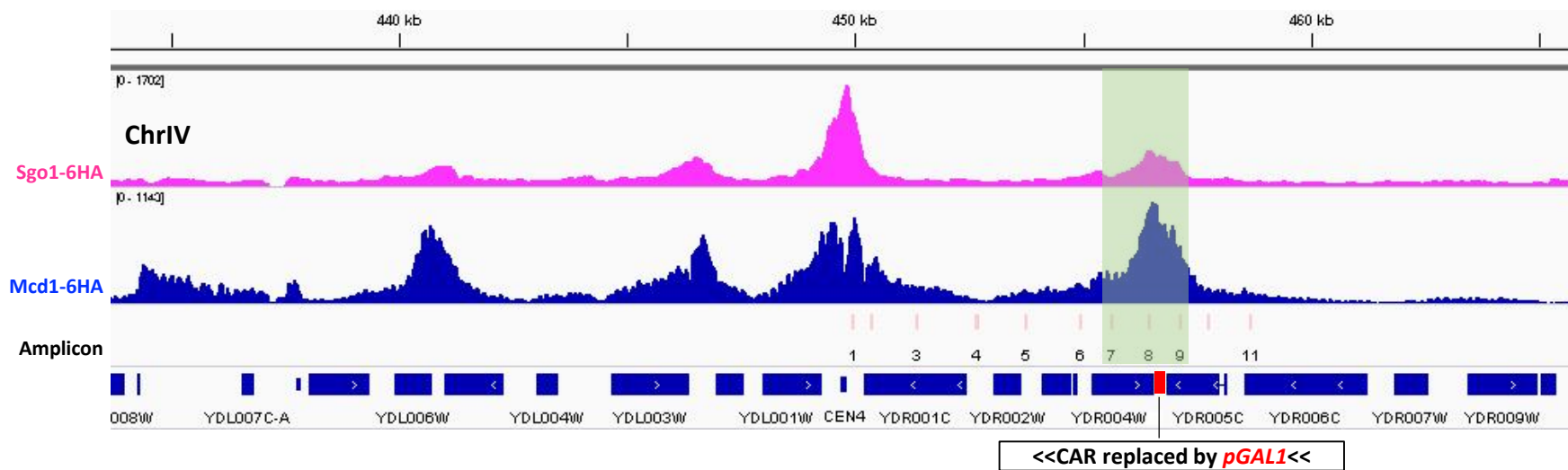


B



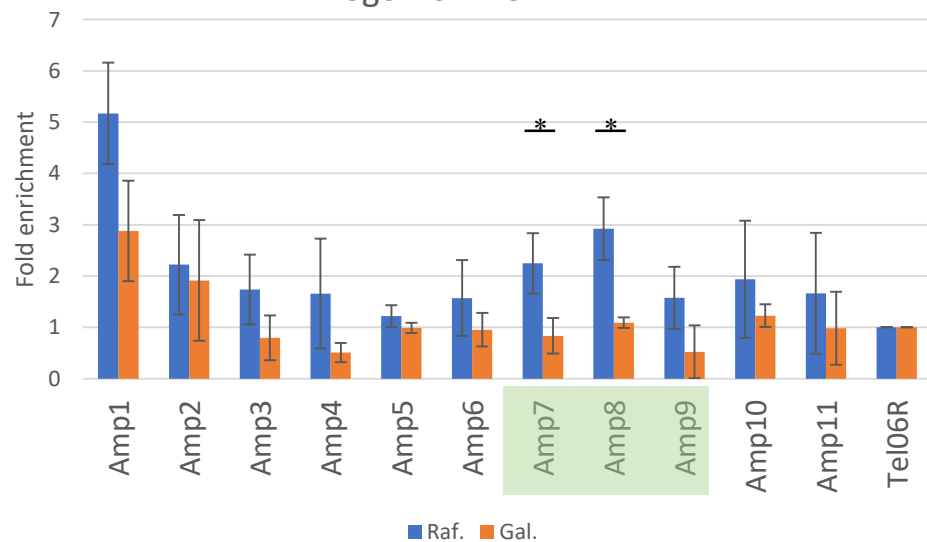
Supplemental Figure 4

A



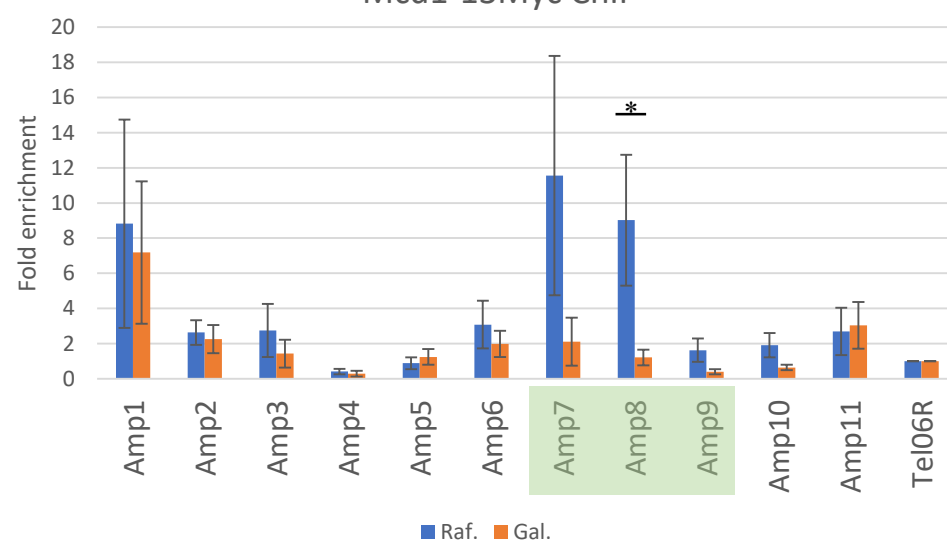
B

Sgo1-6HA ChIP



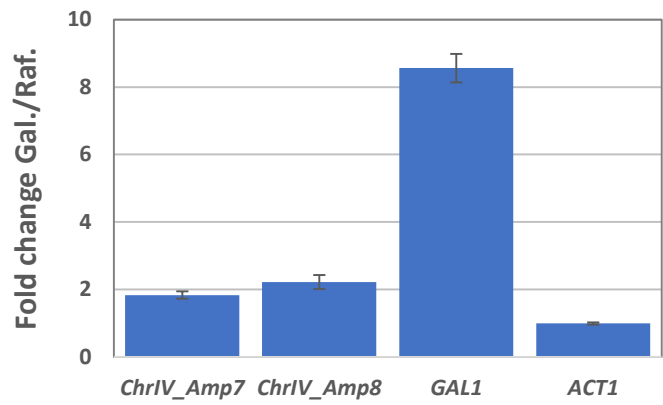
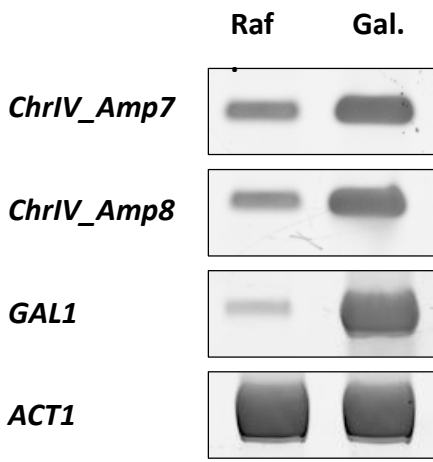
C

Mcd1-13Myc ChIP



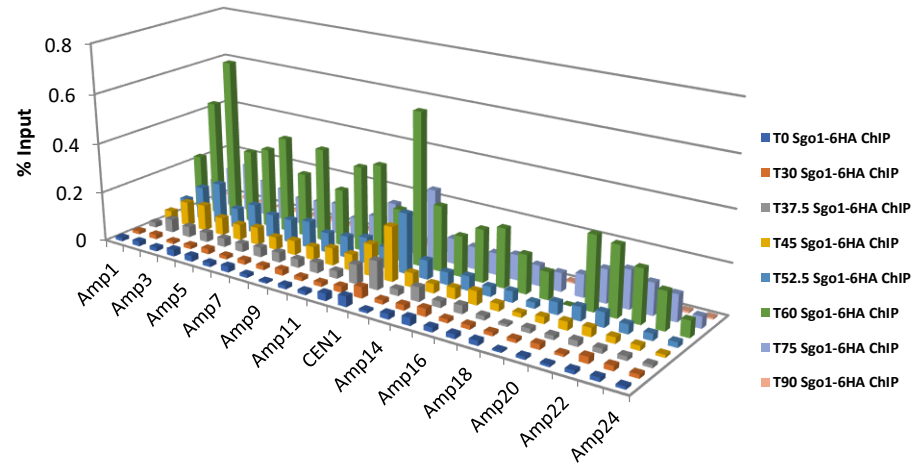
Supplemental Figure 4

D

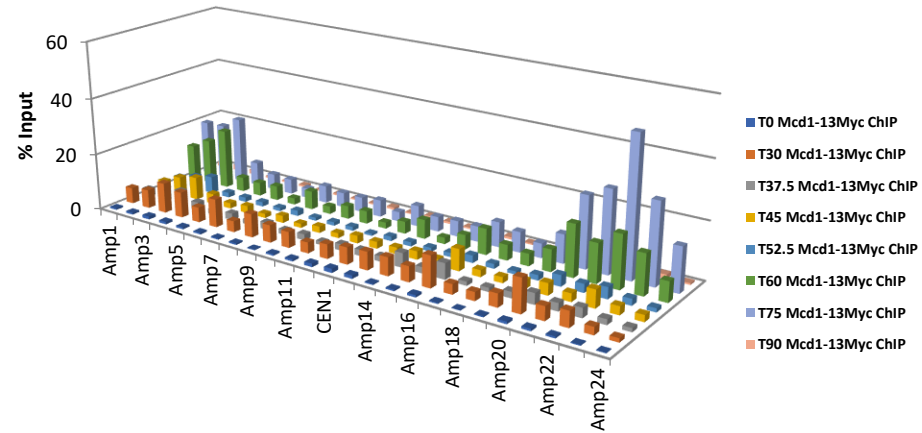


Supplemental Figure 5

A



B



Supplemental Figure 1. Sgo1p is localized only to the centromeric area in each chromosome. A. ChIP-seq data of Sgo1p expressed from its native locus or from a high-copy plasmid (o/p), in a wildtype or a tension sensing motif G44S mutant background, are presented as one single linear DNA. The range of each chromosome is shown on the top. B. Expression of Sgo1p is not affected by the status of the tension sensing motif. Sgo1p is tagged with HA at N' or C' terminus. The 3xHA-Sgo1p is expressed from a plasmid. The Sgo1p-6xHA is expressed from the native *SGO1* locus.

Supplemental Figure 2. ChIP-qPCR to verify the ChIP-Seq findings. Shown are 25 amplicons spanning *CEN1*.

Supplemental Figure 3. Sgo1p recruitment requires cohesin. *IML3*⁺ and *iml3Δ* cells were arrested in G2/M before ChIP for the localization of Mcd1p (panel A) and Sgo1p (panel B). The enrichment of these two proteins was quantified by qPCR. Amplicons are same as those in Figure 3. Shown are average of two biological replicas.

Supplemental Figure 4. Pericentric localization of Sgo1p and Mcd1p is susceptible to ectopic transcription through the region. A. Blow-up of the *CEN4* area showing the major Sgo1p and Mcd1p peaks, amplicons for quantitative PCR in light pink, and the position of the ectopic *GAL1* promoter (*pGAL1*, in red). *pGAL1* drives galactose-induced transcription toward *yDR004W*. Amplicons 7 – 9 are highlighted by a shaded box. B and C. ChIP and quantitative PCR results of Sgo1p and Mcd1p localization in the absence (Raf., raffinose) or presence (Gal., galactose) of transcription from the *pGAL1* promoter. Fold-enrichment of each amplicon was obtained by comparing with the control corresponding to the subtelomeric region of chromosome VI (*TEL06R*). Error bars are standard deviations from three biological replicas * indicates p-value < 0.05. D. The left panel shows the DNA gel images of reverse-transcription quantitative PCR of

the indicated regions. ChrIV_Amp7 and 8 are within the *YDR004W* gene. *GAL1* and *ACT1* are positive and internal control for galactose induction. The right panel shows the quantification data, using *ACT1* expression difference (Raf. vs. Gal.) for normalization. *YDR004W* is induced 2-fold by galactose.

Supplemental Figure 5. Dynamics of Sgo1p (A) and Mcd1p (B) localization at *CEN1* region.

See **Figure 5** legends for description.

1 Supplemental Table 1: Yeast strains used in this study

Strain	Relevant genotype	Source or reference
yJL345	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pQQ18 [ARS CEN LEU2 HTA1-HTB1 HHT2-HHF2]</i>	Luo et al, 2010
yJL346	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK439G44S [ARS CEN LEU2 HTA1-HTB1 hht2-G44S-HHF2]</i>	Luo et al, 2010
yJL322	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::sgo1Δ::TRP1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK440 [ARS CEN URA3 HTA1-HTB1 HHT2-HHF2] pJL51 [2μm URA3 pADH1-3xHA-SGO1-tADH1]</i>	This study
yJL324	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::sgo1Δ::TRP1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK440 [ARS CEN URA3 HTA1-HTB1 hht2-G44S-HHF2] pJL51 [2μm URA3 pADH1-3xHA-SGO1-tADH1]</i>	This study
yJL566	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK439G44S [ARS CEN LEU2 HTA1-HTB1 hht2-G44S-HHF2] pMK144E173H [2μm URA3 pCUP1-gcn5E173H]</i>	This study
yMK1141	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK440 [ARS CEN URA3 HTA1-HTB1 HHT2-HHF2]</i>	Luo et al, 2010
yMK1361	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::sgo1Δ::TRP1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK440 [ARS CEN URA3 HTA1-HTB1 HHT2-HHF2]</i>	This study
yXD143	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1:: bar1Δ::URA3 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pQQ18 [ARS CEN LEU2 HTA1-HTB1 HHT2-HHF2]</i>	This study

Strain	Relevant genotype	Source or reference
yXD144	<i>MATa ade2-1 can1-100 his3-11, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1:: bar1Δ::URA3 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK439G44S [ARS CEN LEU2 HTA1-HTB1 hht2-G44S-HHF2]</i>	This study
yXD237	<i>MATa ade2-1 can1-100 his3-11::MCD1-13MYC::HIS3, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1:: bar1Δ::URA3 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pQQ18 [ARS CEN LEU2 HTA1-HTB1 HHT2-HHF2]</i>	This study
yXD238	<i>MATa ade2-1 can1-100 his3-11::MCD1-13MYC::HIS3, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1:: bar1Δ::URA3 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pMK439G44S [ARS CEN LEU2 HTA1-HTB1 hht2-G44S-HHF2]</i>	This study
yXD286	<i>MATa ade2-1 can1-100 bar1Δ his3-11::MCD1-13MYC::HIS3, 15 leu2-3, 112 trp1-1::SGO1-6HA::TRP1 ura3-1 hht1-hhf1::KAN hht2-hhf2::KAN hta1-htb1::Nat hta2-htb2::HPH pQQ18 [ARS CEN LEU2 HTA1-HTB1 HHT2-HHF2] MAF1-P_{GAL1}</i>	This study

2

3

Supplemental Table 2: Plasmid constructs used in this study

Plasmid	Main features	Source or reference
pQQ18/pMK439	pRS315- <i>HTA1-HTB1 HHT2-HHF2</i>	Luo <i>et al</i> , 2010
pJH33/pMK440	pRS316- <i>HTA1-HTB1 HHT2-HHF2</i>	Luo <i>et al</i> , 2010
pJL51	2μm <i>URA3 pADH1-3xHA-SGO1-tADH1</i>	Luo <i>et al</i> , 2016
pMK390/pFA6a-13Myc-HIS3MX6	13Myc- <i>tADH1-pTEF-HIS3-tTEF</i>	Longtine <i>et al</i> , 1998
pMK389/pFA6a-TRP1-pGAL1-3HA	<i>TRP1-pGAL1-3HA</i>	Longtine <i>et al</i> , 1998

4

5

6 Supplemental Table 3: Oligos used in this study

Name	Sequence
CEN1L5kb	AAGAAGCATTTTTGGGATTG
oXD159	AAGAAACGTTGAACCTACTG
CEN1R5kb	CCTCACGCGCTCTAATCCTA
CEN1R10kb	GTAAGGTTGTCCGTATTGG
CEN16L8kb	CTATGATGAGGAACGTGCAA
oXD162	GGGATCAATCCCAATAGATG
CEN16R3kb	TCCTACGTCATGGAAAACG
CEN1L20kb	GGTTGACCCACAGAGTTTG
CEN1L9kb	TCTCAAGCTGACGTCACTGTCT
CEN1R15kb	TGCTAAGGAGAAGGGCATCA
CEN16L50kb	AGTCATACGATGCATACGTTCC
CEN16L15kb	TCAGGTCATTTCTTCAACACG
CEN16R12kb	ATCAATTTTTCGCTCCAAGG
CEN16R47kb	ACAAGTGGGTGACGTTTTCC
oXD236	CATTATCCGTTGTGGTGGCT
oXD237	TCAGGCTGTTTCTATTCCTCGCTTAGTAAT
oXD242	CAATCAGAAGACCCAATGGC
oXD243	TATATGACCCTTCTAGACACTCTTTTTATT
oXD244	AATAAAAAGAGTGTCTAGAAGGGTCATATAGAAATCTGGAGTACAATTC
oXD244 extender	GAAATCTGGAGTACAATTTCTTTATAGCATATAAATATCAAATATATAGTCATTTTTAAT
oXD245-02	AATATATAGTCATTTTTAATACATGGAAAGCATAATAAAAGTGCACCACGCTTTTCAATT
oXD246	TTAATATGTTGGTTTACAGACATTTATTAAGACTGTAGAAGAAGCTCTAATTTGTGAGTT
oXD252	ATTACTAAGCGAGGAATAGAAACAGCCTGACTCCTTGACGTTAAAGTATAGAGG
oXD253	GTAATAGATGATAAATCAGATCAAGAAGAATCCCTACAGTAGCGGATTAGAAGCCGCC GA
oXD254	CTACTGTAGGGATTCTTCTTGATCTGATTTATCATCTATTACATTCTCATCATAAGTGAA
oXD255	ATTCTCATCATAAGTGAAATCGTATTCTCCTTCGTATTTCAGTGCACCACGCTTTTCAATT
Chrl-Amp1 S	CAAGAGCAAAAAGGGAAATGAT
Chrl-Amp1 AS	CCAGAATTTGTAAGCTCTCAGC
Chrl-Amp2 S	ACAGCGCCACCAAGATATG
Chrl-Amp2 AS	GCCAAGTTTTCGAGGCAAG
Chrl-Amp3 S	AGGTCGAACATTTCTCACCA
Chrl-Amp3 AS	AGCCGTCCGATATATCCTCT
Chrl-Amp4 S	AAACTTACGAATTCTTTCAACTGATT
Chrl-Amp4 AS	ATATACTTCTTTGACCAAACGGAAA
Chrl-Amp5 S	CATCACCACGGACAGTCTTT
Chrl-Amp5 AS	GTGGGGTAGCATACTGAGA
Chrl-Amp6 S	GCAGTGCTGACATGCTGCT
Chrl-Amp6 AS	CGGAAGAGGCAGGTTAAAA
Chrl-Amp7 S	TGCGAAAAAGCCTATACCC

Chrl-Amp7 AS	TTTCAGCGAGCTTTTACCA
Chrl-Amp8 S	AATCAGTCGCATTGAAATTATCT
Chrl-Amp8 AS	TGTATCAGATAGCAAGGCAGCTT
Chrl-Amp9 S	TGATCGTTTTACCACCTCAAC
Chrl-Amp9 AS	TGACGGGGTGGATAGTAATC
Chrl-Amp10 S	CGAGAAGTAGTTCAAATGCAGA
Chrl-Amp10 AS	TGAGGACAGCCTATGGACATT
Chrl-Amp11 S	TCCCACAGCTGATTCAAAG
Chrl-Amp11 AS	TCGGCTCCGTTTAGGTGA
Chrl-Amp12 S	TGTTTATTTCACTTTTCGCGACT
Chrl-Amp12 AS	GCATTTTCAAATACCGCTTG
CEN1 S	GCATAAGTGTGCCTTAGTATG
CEN1 AS	GCGCTTGAAATGAAAGCTCCG
Chrl-Amp13 S	TGTAGAAATGGCGCCAGAA
Chrl-Amp13 AS	AAAACACCCGAGGCAGCA
Chrl-Amp14 S	CAACCACGCAATGAGTCTT
Chrl-Amp14 AS	TGGGGATATCTCAGAATGGA
Chrl-Amp15 S	TGAACAAGGCGAAGAACCA
Chrl-Amp15 AS	AATCTTTGCTTGGCGCAGA
Chrl-Amp16 S	TTGAGGCTTTCAAGTCCCTAT
Chrl-Amp16 AS	CGTATTGAGTTGGGCTATACG
Chrl-Amp17 S	CCACTTGCTGAACCTTTCTG
Chrl-Amp17 AS	TGCGCAAGATTTTGGTGTC
Chrl-Amp18 S	CTTCCCCTGGGGTTCAAG
Chrl-Amp18 AS	CAGCGAATGGATCCTGTAA
Chrl-Amp19 S	AGAGCATAAGTACCAGGATGTGA
Chrl-Amp19 AS	AACCATGTGTAGAAGCGACTAAG
Chrl-Amp20 S	TGCAGTCATCATAGGTTTCTCTT
Chrl-Amp20 AS	GGCATGACTATACCTCTTCAGTG
Chrl-Amp21 S	CCTCACGCGCTCTAATCC
Chrl-Amp21 AS	AGGAAGAAGACCCCAACGA
Chrl-Amp22 S	CACCTTTCTCGCTTCTTCC
Chrl-Amp22 AS	TCAATCGGCTGCTAGCTTA
Chrl-Amp23 S	TCTTCCCAGCCCTTGAAGT
Chrl-Amp23 AS	AACGTAGACGTCCTCGGTATT
Chrl-Amp24 S	TATCAGCACGCGACTGGA
Chrl-Amp24 AS	TCGCGTGATAATTGCAGA
ChrlV-Amp1 S	AAAATAGGCATTATAGATCAGTTCCG
ChrlV-Amp1 AS	CTTATTTACTGTAAAACCTGTGACG
ChrlV-Amp2 S	GGCATTGACCCATCCAAA
ChrlV-Amp2 AS	CCTCATCGTGTTGAAGCAG

ChrIV-Amp3 S	AGCATCGGGATTACTCCT
ChrIV-Amp3 AS	GATCACAGCCCCATTCTT
ChrIV-Amp4 S	GCGATCTTTTCAGGCCAAC
ChrIV-Amp4 AS	GAAACTTGCGCGATCACC
ChrIV-Amp5 S	TTATCTACTGTGAGGAAAAGTTGCT
ChrIV-Amp5 AS	ATGTGATTTTACAATGCTACATAAG
ChrIV-Amp6 S	CGACGTCCAGAACAGTCAA
ChrIV-Amp6 AS	TCACCGTCCGTATAAATCG
ChrIV-Amp7 S	GTGTCCAAC TTCCGAAC
ChrIV-Amp7 AS	TGGTAAATCGCCCTCAGTG
ChrIV-Amp8 S	TCAAGGCTTCAACAATAATTCA
ChrIV-Amp8 AS	GTCCTCTTAAC TTGCCAGA
ChrIV-Amp9 S	TATTGAAAAAGGACGCAATCA
ChrIV-Amp9 AS	CAACCAGAGGAATGGGTCT
ChrIV-Amp10 S	TGCTCCCAAAAAGAGTTGC
ChrIV-Amp10 AS	CTGCTCCCGAAACAAACC
ChrIV-Amp11 S	TTCTCCAGCTCTGTTGC
ChrIV-Amp11 AS	CCTTCTAAAACCTCCACCACC
ChrXVI-Amp1 S	ACCGATTTCCCGTAAGACG
ChrXVI-Amp1 AS	TGCGGTTTCAAGTTGTTCC
ChrXVI-Amp2 S	TTTGGGTTGTATCCCCACT
ChrXVI-Amp2 AS	GGGTAGGTTTGTGGGCTTC
ChrXVI-Amp3 S	CCGGAATATTGGCCGAAC
ChrXVI-Amp3 AS	TCACCAGCTCGTGTCTACC
ChrXVI-Amp4 S	AGCAGCCTTTAATTTTTACAG
ChrXVI-Amp4 AS	CTAGTTCGTGCCGAAGCTGAA
ChrXVI-Amp5 S	TGTCGGTTACGTCCGAAA
ChrXVI-Amp5 AS	AGTTGTTGCCAGCGAACG
ChrXVI-Amp6 S	TGATTGGACCCGCTTCTC
ChrXVI-Amp6 AS	GGCGGAACTTTGTTCTCTC
ChrXVI-Amp7 S	GGAAAGTTTGCTCGCAGTAA
ChrXVI-Amp7 AS	TCCTGACCTCCCCGTAAT
ChrXVI-Amp8 S	TCCCTGGTTTGCGTTGATG
ChrXVI-Amp8 AS	ACCGGTGATCTCTCGTTGT
ChrXVI-Amp9 S	TTGGTCCCTTAGTTCGACAG
ChrXVI-Amp9 AS	CTGGCAGCCTTTGACGAGT
ChrXVI-Amp10 S	GGCCACGGATCCTGTCTT
ChrXVI-Amp10 AS	TGCTTCGTTTGGATCCTC
CEN16 S	ATGCAAAGGTTGAAGCCGTTA
CEN16 AS	GCTACCATGGTGTGTCACT
ChrXVI-Amp11 S	CGGACCGATTACCATTCA

ChrXVI-Amp11 AS	ATGCCATGTTCCGGGATCT
ChrXVI-Amp12 S	ACCCTATGACCCAACCTTGC
ChrXVI-Amp12 AS	CCATCTTTCCCTATGAGGCCCTT
ChrXVI-Amp13 S	TGGGATTAGCGGGTCCTT
ChrXVI-Amp13 AS	TCTCGTGCAATGCTGGAA
ChrXVI-Amp14 S	CATGGGACCCTTGACACAAC
ChrXVI-Amp14 AS	GTGCTTCCAGACCCTCCA
ChrXVI-Amp15 S	TGCGCTGAGTACAGCGTCT
ChrXVI-Amp15 AS	CGCGATGTCCTTCAAAC
ChrXVI-Amp16 S	GTACATGATCGCGGTTCC
ChrXVI-Amp16 AS	TTTCTTGCGACCTCATCC
ChrXVI-Amp17 S	GTAGAGTACCCTGTTGGTCAC
ChrXVI-Amp17 AS	GCGCAGATGCCTTTGAAAT
ChrXVI-Amp18 S	CAACTTGCAAGAGTTCGTC
ChrXVI-Amp18 AS	TCTGGAGGTCTGTGTTCCG
ChrXVI-Amp19 S	CAATATCATCACGTGCGGTCT
ChrXVI-Amp19 AS	CCAATCCTTGCAATTAGCTTCC
ChrXVI-Amp20 S	TCATTGTTCCGGGACGTTG
ChrXVI-Amp20 AS	ATAGCATTGATGCGGCTCT
Tel06R S	CAACTTCACGGATAACTTTTTCAAC
Tel06R AS	AAACCGACAACGCTTGATCTAT
CEN5L95kb S	CCCATCCGATACGAGCAT
CEN5L95kb AS	GGGAAGCCTGTGCGAAAT
CEN1L100kb S	GGCCAAGCGAATAATACTCC
CEN1L100kb AS	AGCAAAGTCATTGCCAAACA
CEN4R595kb S	AAGATGGTCCAGAGCCAAAT
CEN4R595kb AS	TTGACATGCTCTGACACAGG
CEN16L465kb S	GCTGCCATTCTAGTAAACC
CEN16L465kb AS	GCTGAGGGCTCTTGCTTATC

7

8

9

10

11

12

13

14