Supplemental Data

Genome-Wide Dynamics of Htz1, a Histone H2A

Variant that Poises Repressed/Basal Promoters

for Activation through Histone Loss

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Supplemental Experimental Procedures

RNA Preparation and Microarray Analysis

Heat shock (HS) and diauxic shift experiments utilized YBC2128 (WT) and YBC1864 ($htz1\Delta$). For HS, cells were grown in YPD at 25°C to an OD₆₀₀ of ~0.8, and a portion (control sample) of the culture was spun down and frozen in liquid nitrogen as T=0, no HS. The remainder were collected and resuspended in YPD pre-warmed at 37°C. Growth was continued at 37°C for 30 min and samples were collected (HS). Then the culture was shifted back to 25°C for 30 min and samples were collected every 2. For diauxic shift experiments, cells were grown in YPD at 30°C to an OD₆₀₀ of ~0.3 (T=0), and samples were collected every 2 hr for 24 hr. HS and diauxic shift experiments were performed as duplicate biological replicates. HS time course experiments (time points of 0, 5, 10, and 20 min following HS) were performed as triplicate biological replicates, and cultures were split for expression profiling and ChIP analysis (by qPCR). RNA preparation and microarray analysis was performed essentially as described by Zhang et al., 2004.

Chromatin Immunoprecipitation (ChIP)

ChIP experiments were performed as described by Roberts et al., 2003, with the following modifications. Strains were grown in YPD at 30°C to an OD₆₀₀ of 0.6-0.8 and cells were cross-linked with 1% formaldehyde for 45 min at room temperature. For experiments aimed at determining Htz1 occupancy genome-wide in response to HS, samples were collected and treated as described above either prior to HS (T=0), following 30 min of HS, and following 30 min recovery at 25°C. For experiments aimed at determining Htz1 occupancy by aPCR analysis, samples were taken at the time points of 0 (no HS), 1, 2, 5, 10, 20, and 30 min following HS. For diauxic shift experiments, samples were taken at time points described above. All ChIPs were performed as described for HA-Htz1 ChIPs (Zhang et al., 2004) with the following modifications: for α Htz1 and α H3 ChIPs, 1 μ l of polyclonal α Htz1 antibody (Abcam, catalog no. ab4626) or 2 μ l of polyclonal α H3 antibody (Abcam, catalog no. ab1791) was used, respectively, with 35 µl of sheep anti-rabbit IgG M-280 Dynabeads (~ 2×10^7 beads, Dynal Biotech, catalog no. 112.04) and 500 µg of supernatant from the sheared chromatin; For Swr1-Myc, H2A-TAP and H3-TAP ChIPs, 1.33 µl of anti-Myc antibody (9E11, GeneTex, catalog no. GTX20056) or 2 µl anti-protein A antibody (Sigma, catalog no. P-2921) was used, respectively, with 50 μ l of pan-mouse IgG Dynabeads (~ 2 × 10⁷ beads, Dynal Biotech, catalog no. 110.23) and 500 µg of supernatant from the sheared chromatin. All ChIPs were performed in duplicate except the following, which were performed in triplicate: HA-Htz1 (aHA) ChIPs in strain YBC1867 and YBC2084; H2A-TAP (antiprotein A) ChIPs in strain YBC2200 and parallel untagged control ChIPs in strain YBC1894; HS time course experiments in which histone occupancy (HA-Htz1, H2A-TAP and H3) was analyzed by qPCR analysis; α Htz1 ChIPs in WT (YBC1894), *bdf1* (YBC2512), *bdf2* (YBC2513), *sas3* (YBC1911), and *gcn5* (YBC1662) mutants. The purified ChIP samples were subjected to either ChIP microarray (ChIP-chip) analysis or qPCR analysis.

Genome-wide Localization Experiments (ChIP-chip)

The amplification and labeling of ChIP materials, hybridization, scanning and analyzing of arrays were performed essentially as described previously (Roberts et al., 2003). Flagged spots (of poor quality) and background-subtracted spots whose intensity were < 5 in either Cy3 or Cy5 channel, or the sum of intensity in both channels were < 25, were removed. Then Cy3 intensities are normalized to Cy5 intensities such that the mean ratio of Cy5/Cy3 intensities is 1. The normalized ratios of Cy5 (labeled ChIP DNA) to Cy3 (labeled input DNA) were calculated.

Also, a percentile rank was assigned to each segment on the array based on the ChIP enrichment ratios as described in the text. The median ChIP ratios and median percentile ranks (MPR) are reported in Table S4.

Real-Time Quantitative PCR (qPCR) Analysis

qPCR was performed as described by Zhang et al., 2004, except that the average of three independent replicates was reported as relative amplification of each target of interest compared to a normalization control amplicon, which is within the non-promoter IGR iYMR325W, using primer set A. Sequences for all primer sets used in this study are provided in Table S2.

Chromatin Preparation

Strain YBC2228 (HA-Htz1, H2A-TAP) was grown in 1 L of YPD at 30°C to an OD₆₀₀ of ~0.8. Cells were harvested by centrifugation and washed in 0.5 volume cold ddH2O and then 0.5 volume SB (20 mM Tris-HCl [pH 7.5], 1 M sorbitol), resuspended in 10 ml SB, frozen in liquid nitrogen and kept at -80°C until use. The cell slurry was thawed on ice, resuspended in 10 ml PSB (200 mM Tris-HCl [pH 7.5], 20 mM EDTA, 1 M NaCl, 100 mM 2mercaptoethanol (2-ME)) and incubated at room temperature for 10 min. Cells were collected by centrifugation, washed in 50 ml of wash buffer (20 mM Tris-HCl [pH 7.5], 1 M NaCl) and 50 ml SB, and then resuspended in 10 ml SB containing 200 µl glusulase (PerkinElmer, catalog no. PC1128-0595) and incubated at 30°C for 1 hr or until the reading at A_{600} of the mixture dropped to 20-30% of original. The slurry was pelleted by centrifugation and spheroplasts were washed twice in 50 ml SB. The pellet was resuspended in 20 ml EBX-0.1 (20 mM Tris-HCl [pH 7.5], 0.1 M NaCl, 0.25% Triton X-100, 15 mM 2-ME, protease inhibitor cocktail (PI: 2 µg/ml chymostatin, 2 µM pepstatin A, 0.6 µM leupeptin, 2 mM benzamidine, 1 mM phenylmethylsulfonyl fluoride), 50 mM Na-butyrate), and a 10% Triton X-100 solution was added to a final concentration of 0.5%. Suspensions were gently swirled for 10 min while on ice. Cell lysates were then layered over a 10 ml cushion of NIB (20 mM Tris-HCl [pH 7.5], 0.1 M NaCl, 1.2 M sucrose, 15 mM 2-ME, PI, 50 mM Na-butyrate) and centrifuge at 12,000 g for 20 min. The nuclear pellet was resuspended in 10 ml EBX-0.1 and nuclei were lysed by adding 10% Triton X-100 to a final concentration of 1%. Nuclear suspensions were swirled on ice for 15 min, split into 3 tubes, centrifuged at 15,000 g for 20 min. To test for salt resistance of Htz1, pellets were then separately washed twice in one of three buffers of increasing stringency: EBX-0.25 (same as EBX-0.1 but with 0.25 M NaCl), EBX-0.5 (0.5 M NaCl), or EBX-0.7 (0.7 M NaCl). All three were then separately washed with EBX-0.1 (0.5 mM 2-ME, no Na-butyrate) and resuspended in 1 ml EBX-0.1 (0.5 mM 2-ME, no Na-butyrate). Each was then digested to mononucleosomes with micrococal nuclease (Usb, catalog no. 70196Y), subjected to centrifugation, and the supernatant was collected. The supernatant was subjected to SDS-PAGE analysis and western analysis using α HA (12CA5) antibody and α H3 antibody. The same experiment was repeated with strain YBC1895 (untagged strain) and western blots were probed with polyclonal α Htz1 antibody, polyclonal α H2A antibody (Upstate, catalog no. 07-146) and α H3 antibody.

Supplemental References

Roberts, D.N., Stewart, A.J., Huff, J.T., and Cairns, B.R. (2003). The RNA polymerase III transcriptome revealed by genome-wide localization and activity-occupancy relationships. Proc. Natl. Acad. Sci. USA *100*, 14695–14700.

Zhang, H., Richardson, D.O., Roberts, D.N., Utley, R., Erdjument-Bromage, H., Tempst, P., Cote, J., and Cairns, B.R. (2004). The Yaf9 component of the SWR1 and NuA4 complexes is required for proper gene expression, histone H4 acetylation, and Htz1 replacement near telomeres. Mol. Cell Biol. *24*, 9424–9436.



Figure S1. Yaf9 Is Required for Efficient Htz1 Deposition

(A) Htz1 occupancy is highly reduced genome-wide in a strain lacking Yaf9. Distribution of median ratios of Htz1 ChIP at IGRs in a *yaf9* Δ strain was compared to that in WT and untagged control strains. Strains: *yaf9* Δ YBC2084; WT YBC1867; untagged YBC1895.

(B) Yaf9 is required for Htz1 promoter specificity. Distribution of the median ratios of Htz1 ChIP in a $yaf9\Delta$ strain for each promoter class.

(C) Htz1 ChIP enrichment in WT (sorted by percentile ranks, x-axis) versus Htz1 occupancy in *yaf9*Δ, plotted as the moving average (window size 80, step 1) of percentile ranks (y-axis).

Figure S2. Tiling of Htz1 Occupancy at Promoters



Htz1 occupancy at particular positions of six promoters was determined by qPCR of ChIP replicates. (p*YOR285W* and p*YDL218W* are TATA-containing promoters, with the predicted TATA located within amplicons D and I, respectively). Values are the average of three independent ChIPs with qPCR determination performed twice. Error bars: SD. Positions for each amplicon are as indicated on the physical map diagram. See Table S2 for primer sequences.



Figure S3. Htz1 Occupies the Promoters of mRPGs, but Is Deficient at the Promoters of cRPGs

Each histogram depicts the number of mRPGs (A-D) or cRPGs (E-H) (y-axis) within each percentile rank interval of Htz1 or H2A ChIP enrichment (x-axis) in tagged (HA-Htz1: B and F; H2A-TAP: D and H) and untagged (for Htz1: A and E; for H2A: C and G) strains. See Figures 1 and 2 for strain designations.





(A) The *HSP104* promoter is not enriched for Htz1, and all tested histones are lost following HS. Histone ChIP enrichment was determined by qPCR. Values are the average of three independent ChIPs with qPCR determination performed twice. Error bars: SD.

(B) Deletion of *HTZ1* has no impact on *HSP104* activation during HS. Changes in *HSP104* expression during HS time course in WT and $htz1\Delta$ strains were quantified by microarray analysis. Error bars: SD.

Table S1. Yeast Strains Used in This Study

YBC162 $MAT\alpha$ $his3\Lambda$ $leu2\Lambda0$ $lys2\Lambda0$ $ura3\Lambda0$ $ger3\Lambda$:KanMXResearch GeneticsYBC1864 $MATa$ $his3\Lambda1$ $leu2\Delta0$ $ura3\Lambda0$ $ger3\Lambda$:KanMXGeneticsYBC1867 $MAT\alpha$ $HHT1$ -HHF1 $A(HHT2-HHF2)$ $leu2-3,112$ $ura3-52$ $lys2\Lambda201$ HA -HTZ1M. Smith ResearchYBC1897 $MAT\alpha$ $HHT1$ -HHF1 $A(HHT2-HHF2)$ $leu2-3,112$ $ura3-52$ $lys2\Lambda201$ HA -HTZ1M. Smith ResearchYBC1895 $MAT\alpha$ $his3\Lambda1$ $leu2\Delta0$ $ura3\Delta0$ $ger3\Lambda0$ Genetics ResearchYBC1895 $MAT\alpha$ $his3\Lambda1$ $leu2\Delta0$ $ura3\Lambda0$ $ger3\Lambda0$ Genetics ResearchYBC1895 $MAT\alpha$ $his3\Lambda1$ $leu2\Delta0$ $ura3\Lambda0$ $ger3\Lambda0$ $gersics$ YBC2184 $MATa$ $his3\Lambda1$ $leu2\Lambda0$ $ura3\Lambda0$ $gersics$ $gersics$ YBC2185 $MATa$ $hisMT-HHF1$ $hild=Nf1$:: $gWZ405$ -F2F9-LEU2 $A(HHT2-HHF2)$ $leu2$ $his3\Lambda200$ $ura3-52$ $hys2$ $trp1\Delta63$ YBC2150 $MATa$ $hhil-hhf1$:: $gWZ405$ -F2F9-LEU2 $A(HHT2-HHF2)$ $leu2$ $his3\Lambda200$ $ura3-52$ $hys2$ $trp1\Delta63$ YBC2151 $MATa$ $hhil-hhf1$:: $gWZ405$ -F2F9-LEU2 $A(HHT2-HFP1)$ $his3\Lambda200$ $ura3-52$ $hys2$ $trp1\Delta63$ YBC2156 $MATa$ $hhil-hhf1$:: $gWZ405$ -F2F9-LEU2 $A(HHT2-HFP1)$ $his3\Lambda200$ $ura3-52$ $hys2$ $trp1\Delta63$ YBC2156 $MATa$ $hhil-hhf1$:: $gWZ405$ -F2F9-LEU2 $A(HHT2-HFP1)$ <t< th=""><th>Strains*</th><th colspan="5">Genotype</th></t<>	Strains*	Genotype				
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MATa PBC1911his3A1leu2A0ura3A0met15A0sas3A::KanMXResearch GeneticsYBC2084MATaHHT1-HHF1 $\Lambda(HHT2-HHF2)$ leu2-3,112ura3-52lys2A201HA-HTZ1This workYBC2128MATaleu2ura3HA-HTZ1Init workThis workThis workYBC2137MATaleu2ura3HA-HTZ1Init workThis workYBC2150MATahh1-hhf1::pWZ405-F2F9-LEU2 $\Lambda(HHT2-HHF2)$ leu2his3A200ura3-52lys2trp1A63YBC2150MATahh1-hhf1::pWZ405-F2F9-LEU2 $\Lambda(HHT2-HHF2)$ leu2his3A200ura3-52lys2trp1A63YBC2151MATahh1-hhf1::pWZ405-F2F9-LEU2 $\Lambda(HHT2-HHF2)$ leu2his3A200ura3-52lys2trp1A63YBC2154MATahh1-hhf1::pWZ405-F2F9-LEU2 $\Lambda(HHT2-HHF2)$ leu2his3A200ura3-52lys2trp1A63YBC2156MATahh1-hhf1::pWZ405-F2F9-LEU2 $\Lambda(HHT2-HHF2)$ leu2his3A200ura3-52lys2trp1A63YBC2162MATahh1-hhf1::pWZ405-F2F9-LEU2 $\Lambda(HHT2-HHF2)$ leu2his3A200ura3-52lys2trp1A63YBC2162MATaleu2ura3HA-HTZ1fortao(CEN; H3WT; H4-K5,12R; TRP1)]This workYBC2162MATahh1-hhf1::pWZ405-F2F9-LEU2 $\Lambda(HHT2-HHF2)$ leu2his3A200ura3-52lys2trp1A63YBC2162MATahis3A1leu2ura3 A0met15A0HTA:TAP::his5+J.S. <td>YBC1895</td> <td>$MAT\alpha$</td> <td>his$3\Delta 1$ leu$2\Delta 0$ lys$2\Delta 0$ ura$3\Delta 0$</td> <td>Genetics</td>	YBC1895	$MAT\alpha$	his $3\Delta 1$ leu $2\Delta 0$ lys $2\Delta 0$ ura $3\Delta 0$	Genetics		
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	VDC1011	1.6.47		Research		
YBC2084MATaHHTI-HHTI A(HHT2-HHT2)leu2-3,112ura3-52lys2A201HA-HTZ1This workYBC2128MATaleu2ura3HA-HTZ1This workThis workThis workYBC2137MATahht1-hhf1::pWZ405-F2F9-LEU2A(HHT2-HHF2)leu2his3A200ura3-52lys2trp1A63YBC2150MATahht1-hhf1::pWZ405-F2F9-LEU2A(HHT2-HHF2)leu2his3A200ura3-52lys2trp1A63YBC2151MATahht1-hhf1::pWZ405-F2F9-LEU2A(HHT2-HHF2)leu2his3A200ura3-52lys2trp1A63YBC2154MATahht1-hhf1::pWZ405-F2F9-LEU2A(HHT2-HHF2)leu2his3A200ura3-52lys2trp1A63YBC2156MATahht1-hhf1::pWZ405-F2F9-LEU2A(HHT2-HHF2)leu2his3A200ura3-52lys2trp1A63YBC2156MATahht1-hhf1::pWZ405-F2F9-LEU2A(HHT2-HHF2)leu2his3A200ura3-52lys2trp1A63YBC2162MATahai3A1leu2ura3hai-HTZ1swrlA::KamAXThis workYBC2170MATaleu2ura3A0met15A0HH12:TAP::his5+J.S. WeissmanYBC218MATahis3A1leu2A0ura3A0met15A0HH2:TAP::his5+J.S. WeissmanYBC2208MATahis3A1leu2A0ura3A0met15A0HH2:TAP::his5+J.S. WeissmanYBC2218MATaleu2ura3hA:HTZ1fp1436(CR31+H3KA:H4HT(copy II): TRP1)]This workYBC2224MATa	YBC1911	MAT a	$his3\Delta I \ leu \Delta U \ ura3\Delta U \ met I \Delta U \ sas3\Delta :: KanMX$	Genetics		
YBC2128MATaleu2ura3HA+HTZ1This workYBC2137MATahhtl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2150MATahhtl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2151MATahhtl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2151MATahhtl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2154MATahhtl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2156MATahhtl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2162MATahhtl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2170MATaleu2ura3HA-HTZ1swrl Δ :fis workThis workYBC2170MATaleu2ura3 Δ 0met15 Δ 0HHT2:TAP::his5+J.S. WeissmanYBC2189MATahis3 Δ 1leu2 Δ 0ura3 Δ 0met15 Δ 0HHT2:TAP::his5+J.S. WeissmanYBC2223MATahis3 Δ 1leu2 Δ 0ura3 Δ 0met15 Δ 0ura3-52lys2trp1 Δ 63YBC2224MATahit-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52<	YBC2084	$MAT\alpha$	HHT1-HHF1 Δ (HHT2-HHF2) leu2-3,112 ura3-52 lys2 Δ 201 HA-HTZ1 yaf9 Δ ::URA3	This work		
YBC2137MATahhl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1 Δ 63This workYBC2150MATahhl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2151MATahhl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2151MATahhl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2154MATahhl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2156MATahhl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2162MATahhl-hhfl::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2162MATaleu2ura3HA-HTZ1SWR1-Myc::KanMXThis workE.K. O'Shea andJ.S. WeissmanYBC2198MATahis3 Δ 1leu2 Δ 0ura3 Δ 0met15 Δ 0HTA2:TAP::his5+J.S. WeissmanE.K. O'Shea andYBC2218MATaleu2ura3leu2 Δ 0ura3 Δ met15 Δ 0HTA2:TAP::his5+J.S. WeissmanYBC2224MATahhl-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63 <td< td=""><td>YBC2128</td><td>$MAT\alpha$</td><td>leu2 ura3 HA-HTZ1</td><td>This work</td></td<>	YBC2128	$MAT\alpha$	leu2 ura3 HA-HTZ1	This work		
$\begin{array}{llllllllllllllllllllllllllllllllllll$	YBC2137	$MAT\alpha$	hht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2) leu2 his3 Δ 200 ura3-52 lys2 trp1 Δ 63	This work		
YBC2150MATahhli-hhfi::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ This workYBC2151MATahhli-hhfi::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ This workYBC2154MATahhli-hhfi::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ This workYBC2154MATahhli-hhfi::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ This workYBC2156MATahhli-hhfi::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ This workYBC2162MATahhli-hhfi::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ This workYBC2162MATaleu2ura3HA-HTZISWR1-Myc::KanMXThis workE.K. O'Shea andYBC2198MATahis3 $\Delta 1$ leu2 $\Delta 0$ ura3 $\Delta 0$ met15 $\Delta 0$ HT2:TAP::his5+J.S. WeissmanYBC2218MATaleu2ura3lys2-128 ∂ HA-HTZIset1 Δ ::HIS3MX6This workYBC2224MATahhli-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ YBC2228MATahhli-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ YBC2461MATahhli-hhf1::pWZ405-F2F9-			HA-HTZ1 [p1408(YCp-50 copy II; H3-H4 WT; URA3)]			
$\begin{array}{llllllllllllllllllllllllllllllllllll$	YBC2150	$MAT\alpha$	hht1-hhf1:: $pWZ405$ -F2F9-LEU2 $\Delta(HHT2-HHF2)$ leu2 his3 $\Delta 200$ ura3-52 lys2 trp1 $\Delta 63$	This work		
YBC2151MATahht1-hhf1:::pW2405-F2F9-LEU2(HHT2-HHT2) leu2his3\Delta200ura3-52lys2trp1 Δ 63This workYBC2154MATahht1-hhf1:::pW2405-F2F9-LEU2(HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1 Δ 63This workYBC2156MATahht1-hhf1:::pW2405-F2F9-LEU2A(HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2156MATahht1-hhf1:::pW2405-F2F9-LEU2A(HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63This workYBC2162MATaleu2ura3HA-HTZ1SwrlA:::KanMXThis workThis workYBC2198MATahis3 Δ 1leu2 Δ 0ura3 Δ 0met15 Δ 0HHT2:TAP::his5+J.S. WeissmanYBC2200MATahis3 Δ 1leu2 Δ 0ura3 Δ 0met15 Δ 0HT2:TAP::his5+J.S. WeissmanYBC2218MATaleu2ura3hu-HTZ1set1 Δ ::HIS3MX6This workYBC2223MATahu1-hhf1:::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2224MATaleu2ura3hu1-hhf1:::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63YBC2228MATaleu2ura3HA-HTZ1[H14:HA:HHT2]HH1-HHT2HH1-HHT2HH1-HHT2YBC2460MATahu1-hhf1:::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3 Δ 200ura3-52lys2trp1 Δ 63 <t< td=""><td></td><td>1.6.17</td><td>HA-HTZI [p1425(CEN; H3 WT; H4-K16R; TRP1)]</td><td></td></t<>		1.6.17	HA-HTZI [p1425(CEN; H3 WT; H4-K16R; TRP1)]			
$\begin{aligned} & \text{HA-HIZ1} \ [pl423(CEN; H3 W1; H4-K160; IRP1)] \\ & \text{YBC2154} \qquad MAT\alpha \\ & \text{hht} -\text{hht} -\text{hht} [:pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \\ & \text{HA-HTZ1} \ [pl420(CEN; H3 WT; H4-K5, 12R; TRP1)] \\ & \text{YBC2156} \qquad MAT\alpha \\ & \text{hht} -\text{hht} [:pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \\ & \text{HA-HTZ1} \ [pl420(CEN; H3 WT; H4-K5, 12R; TRP1)] \\ & \text{YBC2162} \qquad MAT\alpha \\ & \text{leu2 \ ura3 \ HA-HTZ1 \ swr1\Delta:KanMX \\ & \text{YBC2170} \qquad MAT\alpha \\ & \text{leu2 \ ura3 \ HA-HTZ1 \ SWR1-Myc::KanMX \\ & \text{YBC2170} \qquad MAT\alpha \\ & \text{leu2 \ ura3 \ HA-HTZ1 \ SWR1-Myc::KanMX \\ & \text{YBC2170} \qquad MAT\alpha \\ & \text{leu2 \ ura3 \ HA-HTZ1 \ SWR1-Myc::KanMX \\ & \text{YBC2180} \qquad MATa \\ & \text{his}3\Delta 1 \ leu2\Delta 0 \ ura3\Delta 0 \ met15\Delta 0 \ HTA2:TAP::his5+ \\ & \text{YBC2200} \qquad MATa \\ & \text{his}3\Delta 1 \ leu2\Delta 0 \ ura3\Delta 0 \ met15\Delta 0 \ HTA2:TAP::his5+ \\ & \text{YBC2223} \qquad MATa \\ & \text{his}\Delta 1 \ leu2\Delta 0 \ ura3\Delta 0 \ met15\Delta 0 \ HTA2:TAP::his5+ \\ & \text{YBC2223} \ MATa \\ & \text{hill-hhf1::pWZ405-F2F9-LEU2 \ } (HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \\ & \text{This work } \\ & This wor$	YBC2151	MATα	hht1-hhf1:: $pWZ405$ -F2F9-LEU2 Δ (HHT2-HHF2) leu2 his3 Δ 200 ura3-52 lys2 trp1 Δ 63	This work		
YBC2154MATAIntri-Intripue2403-F2F9-LEU2(HT12-HT1F2)leu2ht33200ura3-32lys2tp1A63This workYBC2156MATAhht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3200ura3-52lys2trp1A63This workYBC2162MATaleu2ura3HA-HTZ1[p1420(CEN; H3 WT; H4-K8, 16R; TRP1)]YBC2162MATaThis workYBC2170MATaleu2ura3HA-HTZ1SWR1-Myc::KanMXThis workYBC2198MATahis3\Delta1leu2A0ura3A0met15A0HHT2:TAP::his5+J.S. WeissmanYBC2200MATahis3A1leu2A0ura3A0met15A0HTA2:TAP::his5+J.S. WeissmanYBC2218MATaleu2ura3lys2-1280HA-HTZ1set1A::HIS3MK6This workYBC2223MATahht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3D200ura3-52lys2trp1A63YBC2224MATaleu2ura3hk4-HTZ1[p1435 (pRS314-H3K4A-H4WT (copy II); TRP1)]This workThis workYBC2228MATaleu2ura3HA-HTZ1HTA2:TAP::his5+This workYBC2460MATahht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3D200ura3-52lys2trp1A63YBC2461MATahht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3D200ura3-52lys2trp1A63YBC2461MATahht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2)leu2his3D200ura3	VDC2154	MAT.	HA-HIZI [p1423(CEN; H3 W1; H4-K16Q; TKP1)]	This sul		
YBC2156MATahht-hhf1::pWZ405-F2F9-LEU2 $\Delta(HHT2-HHF2)$ leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ YBC2162MATaleu2ura3HA-HTZ1[p1420(CEN; H3 WT; H4-K8, 16R; TRP1)]This workYBC2162MATaleu2ura3HA-HTZ1swr1 Δ ::KanMXThis workYBC2170MATaleu2ura3HA-HTZ1SWR1-Myc::KanMXThis workYBC2198MATahis3 $\Delta 1$ leu2 $\Delta 0$ ura3 $\Delta 0$ met15 $\Delta 0$ HHT2:TAP::his5+J.S. WeissmanYBC2200MATahis3 $\Delta 1$ leu2 $\Delta 0$ ura3 $\Delta 0$ met15 $\Delta 0$ HTA2:TAP::his5+J.S. WeissmanYBC2218MATaleu2ura3lys2-128 ∂ HA-HTZ1set1 Δ ::HIS3MX6This workYBC2223MATahht1-hhf1::pWZ405-F2F9-LEU2 $\Delta(HHT2-HHF2)$ leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ YBC2224MATahht1-hhf1::pWZ405-F2F9-LEU2 $\Delta(HHT2-HHF2)$ leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ YBC2228MATaleu2ura3HA-HTZ1[f]4136 (pRS314-H3K4R-H4WT (copy II); TRP1)]This workThis workYBC2460MATahht1-hhf1::pWZ405-F2F9-LEU2 $\Delta(HHT2-HHF2)$ leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ YBC2460MATahht1-hhf1::pWZ405-F2F9-LEU2 $\Delta(HHT2-HHF2)$ leu2his3 $\Delta 200$ ura3-52lys2trp1 $\Delta 63$ YBC2461MATahht1-hhf1::pWZ405-F2F9-LEU2 $\Delta(HHT2-HHF2)$ leu2his3 $\Delta 200$ ura3-5	YBC2154	MAIα	$nnt1-nnf1::pwZ405-F2F9-LEU2 \Delta(HH12-HHF2) leu2 niss\Delta200 uras-52 lys2 lrp1\Delta05$	I his work		
TBC2136MATaInit=Init]:::, WZ403-F2F9-LEU2 λ (HH12-HHF2)leu2InitSXX200ura3-52lys2ltp1X05This workYBC2162MATaleu2ura3HA-HTZ1SWT1A::KanMXThis workYBC2170MATaleu2ura3HA-HTZ1SWR1-Myc::KanMXThis workYBC2198MATahis3\Delta1leu2\Delta0ura3\Delta0met15\Delta0HHT2:TAP::his5+J.S. WeissmanYBC2198MATahis3\Delta1leu2\Delta0ura3\Delta0met15\Delta0HTA2:TAP::his5+J.S. WeissmanYBC2218MATahis3\Delta1leu2A0ura3A0met15\Delta0HTA2:TAP::his5+J.S. WeissmanYBC2223MATahol1-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1A63YBC2224MATahht1-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1A63YBC2228MATahht1-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1A63YBC2460MATahht1-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1A63YBC2461MATahht1-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1A63YBC2462MATahht1-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3\Delta200ura3-52lys2trp1A63YBC2462MATahht1-hhf1::pWZ405-F2F9-LEU2 λ (HHT2-HHF2)leu2his3\Delta200ura3-52<	VDC2156	MATO	HA-HIZI = [p1420(CEN; H5 WI; H4-K5, 12K; IKP1)] hbs1 hbs1 wW7405 E2E0 LEU2 A (HHT2 HHE2) low2 hig2A 200 wwg2 52 hw2 tum1A 62	This work		
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$\begin{array}{c} HA-HTZ1 \ [p1435 \ (pRS314-H3K4A-H4WT \ (copy II); \ TRP1)] \\ \mbox{YBC2224} & MAT\alpha & hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ HA-HTZ1 \ [p1436 \ (pRS314-H3K4R-H4WT \ (copy II); \ TRP1)] \\ \mbox{YBC2228} & MAT\alpha & leu2 \ ura3 \ HA-HTZ1 \ HTA2:TAP::his5+ & This work \\ \mbox{YBC2460} & MAT\alpha & hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ \mbox{HA-HTZ1 \ [p1415(H3K14Q-H4 \ WT; \ TRP1)]} \\ \mbox{YBC2461} & MAT\alpha & hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ \mbox{HA-HTZ1 \ [p1416(H3K14G-H4 \ WT; \ TRP1)]} \\ \mbox{YBC2462} & MAT\alpha & hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ \mbox{HA-HTZ1 \ [p1416(H3K14G-H4 \ WT; \ TRP1)]} \\ \mbox{YBC2462} & MAT\alpha & hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ \mbox{HA-HTZ1 \ [p1417(H3K14R-H4 \ WT; \ TRP1)]} \\ \mbox{YBC2462} & MAT\alpha & hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ \mbox{HA-HTZ1 \ [p1417(H3K14R-H4 \ WT; \ TRP1)]} \\ \mbox{YBC2512} & MATa & hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ \mbox{HA-HTZ1 \ [p1417(H3K14R-H4 \ WT; \ TRP1)]} \\ \mbox{Research} \\ \mbox{YBC2512} & MATa & hit1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta200 \ ura3-52 \ lys2 \ trp1\Delta63 & This work \\ \mbox{HA-HTZ1 \ [p1417(H3K14R-H4 \ WT; \ TRP1)]} \\ \mbox{Research} \\ \mbox{Research} \\ \mbox{Research} \\ \mbox{Research} \\ \mbox{HA-HTZ1 \ lou2h0 \ model} \ hdl1 \ hdl2 $	YBC2223	MATα	hht1-hhf1:: $pWZ405$ -F2F9-LEU2 Δ (HHT2-HHF2) leu2 his3 Δ 200 ura3-52 lvs2 trp1 Δ 63	This work		
YBC2224 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63$ This workYBC2228 $MAT\alpha$ $leu2$ ura3 HA-HTZ1 HTA2:TAP::his5+This workYBC2460 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This workYBC2461MAT\alphahht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This workYBC2461MAT\alphahht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This workYBC2462MAT\alphahht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This workYBC2512MAT\alphahht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This work$			HA-HTZ1 [p1435 (pRS314-H3K4A-H4WT (copy II); TRP1)]			
$\begin{array}{c} HA-HTZ1 [p1436 \ (pRS314-H3K4R-H4WT \ (copy \ II); \ TRP1)] \\ \mbox{YBC2228} \qquad MAT\alpha leu2 \ ura3 HA-HTZ1 HTA2:TAP::his5+ \\ \mbox{YBC2460} \qquad MAT\alpha hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta (HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \\ \mbox{This work} \\ \mbox{YBC2461} \qquad MAT\alpha hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta (HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \\ \mbox{This work} \\ \mbox{HA-HTZ1} [p1416(H3K14Q-H4 \ WT; \ TRP1)] \\ \mbox{YBC2462} \qquad MAT\alpha hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta (HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \\ \mbox{This work} \\ \mbox{HA-HTZ1} [p1416(H3K14G-H4 \ WT; \ TRP1)] \\ \mbox{YBC2462} \qquad MAT\alpha hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta (HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \\ \mbox{This work} \\ \mbox{HA-HTZ1} [p1417(H3K14R-H4 \ WT; \ TRP1)] \\ \mbox{YBC2512} \qquad MAT\alpha hht1-hhf1::pWZ405 \ mc2A0 \ mc2A0 \ mc4bA0 \ hdb1AuV \ hVL \\ \mbox{Research} \\ \mbox{Constrained} \\ \mbox{Research} \\ Re$	YBC2224	$MAT\alpha$	hht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2) leu2 his3 Δ 200 ura3-52 lys2 trp1 Δ 63	This work		
YBC2228 $MAT\alpha$ $leu2$ $ura3$ HA -HTZ1 $HTA2:TAP::his5+$ This workYBC2460 $MAT\alpha$ $hht1$ - $hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2461 $MAT\alpha$ $hht1$ - $hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2461 $MAT\alpha$ $hht1$ - $hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2462 $MAT\alpha$ $hht1$ - $hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2462 $MAT\alpha$ $hht1$ - $hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2462 $MAT\alpha$ $hht1$ - $hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2512 $MAT\alpha$ $hht1$ - $hhf2$ $mar2A0$ $mar2A0$ $mar2A0$ $mar2A0$ $mar2A0$ $mar2A0$ $mar2A0$ $mar2A0$			HA-HTZ1 [p1436 (pRS314-H3K4R-H4WT (copy II); TRP1)]			
YBC2460 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63$ This workYBC2461 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63$ This workYBC2462 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63$ This workYBC2462 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This workYBC2462MAT\alphahht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This workYBC2512MAT\alphahht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta200 ura3-52 lys2 trp1\Delta63This work$	YBC2228	MATα	leu2 ura3 HA-HTZ1 HTA2:TAP::his5+	This work		
$\begin{array}{c} HA-HTZ1 \ \left[p1415(H3K14Q-H4 \ WT; \ TRP1)\right] \\ YBC2461 \qquad MAT\alpha \qquad hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \qquad This work \\ HA-HTZ1 \ \left[p1416(H3K14G-H4 \ WT; \ TRP1)\right] \\ YBC2462 \qquad MAT\alpha \qquad hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \qquad This work \\ HA-HTZ1 \ \left[p1417(H3K14R-H4 \ WT; \ TRP1)\right] \qquad Research \\ YBC2512 \qquad MATa \qquad his2A1 \ lw2A0 \ wrs2A0 \ wrs15A0 \ hdf1Av Y \ MY \end{array}$	YBC2460	MATα	hht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2) leu2 his3 Δ 200 ura3-52 lys2 trp1 Δ 63	This work		
YBC2461 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2462 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2462 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workYBC2512 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2)$ $leu2$ $his3\Delta 200$ $ura3-52$ $lys2$ $trp1\Delta 63$ This workVBC2512 $MAT\alpha$ $his2\Delta la$ $ura2\Delta 0$ $ura15\Delta 0$ $hdcl \Delta uV$ MV Research			HA-HTZ1 [p1415(H3K14Q-H4 WT; TRP1)]			
$\begin{array}{c} HA-HTZ1 \ [p1416(H3K14G-H4 \ WT; \ TRP1)] \\ \text{YBC2462} \qquad MAT\alpha \qquad hht1-hhf1::pWZ405-F2F9-LEU2 \ \Delta(HHT2-HHF2) \ leu2 \ his3\Delta 200 \ ura3-52 \ lys2 \ trp1\Delta 63 \end{array} \text{This work} \\ HA-HTZ1 \ [p1417(H3K14R-H4 \ WT; \ TRP1)] \\ \text{VBC2512} \qquad MATz \qquad his2A \ l \ hu2A \ o \ mus2A \ o \ mus15A \ o \ hdC \ AuK \ MK \end{array}$	YBC2461	$MAT\alpha$	hht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2) leu2 his3 Δ 200 ura3-52 lys2 trp1 Δ 63	This work		
YBC2462 $MAT\alpha$ $hht1-hhf1::pWZ405-F2F9-LEU2 \Delta(HHT2-HHF2) leu2 his3\Delta 200 ura3-52 lys2 trp1\Delta 63$ This work HA-HTZ1 [p1417(H3K14R-H4 WT; TRP1)] NBC2512 MATa his2Al hu22A0 mm22A0 mmt15A0 hdfL4uK MK			HA-HTZ1 [p1416(H3K14G-H4 WT; TRP1)]			
HA-HTZ1 [p1417(H3K14R-H4 WT; TRP1)] Research	YBC2462	$MAT\alpha$	hht1-hhf1::pWZ405-F2F9-LEU2 Δ (HHT2-HHF2) leu2 his3 Δ 200 ura3-52 lys2 trp1 Δ 63	This work		
NDC2512 MATe his 20.1 Jan 20.0 min 20.0 mint 150.0 h HCl An K MV			HA-HTZ1 [p1417(H3K14R-H4 WT; TRP1)]			
	VDC2512	1447		Research		
$\mathbf{Y} \mathbf{B} \mathbf{U} \mathbf{Z} \mathbf{S} \mathbf{U} \mathbf{Z} \mathbf{M} \mathbf{A} \mathbf{I} \mathbf{a} n \mathbf{S} \mathbf{S} \Delta \mathbf{I} l e \mathbf{U} \mathbf{Z} \Delta \mathbf{U} u \mathbf{I} \mathbf{a} \mathbf{S} \Delta \mathbf{U} m e \mathbf{I} \mathbf{S} \Delta \mathbf{U} b \mathbf{a} \mathbf{J} \mathbf{I} \Delta \mathbf{U} b \mathbf{a} \mathbf{J} \mathbf{I} \Delta \mathbf{U} \mathbf{S} \mathbf{A} \mathbf{I} \mathbf{A} \mathbf{U} \mathbf{U} \mathbf{A} \mathbf{U} \mathbf{U} \mathbf{A} \mathbf{U} \mathbf{U} \mathbf{A} \mathbf{U} \mathbf{U} \mathbf{U} \mathbf{U} \mathbf{A} \mathbf{U} \mathbf{U} \mathbf{U} \mathbf{U} \mathbf{U} \mathbf{U} \mathbf{U} U$	YBC2512	MAT a	$niss\Delta i$ $ieu \Delta u uras\Delta u$ $met is\Delta u$ $bdj i \Delta :: KanMX$	Genetics		
VBC2513 MATe bis201 lau200 wro300 mat1500 bdf24::KanMV Constinue	VBC2512	MATe	$his 3\Lambda 1 + low 2\Lambda 0 + wa 2\Lambda 0 + mat 15\Lambda 0 + hdf 2\Lambda + Kan MY$	Genetics		
All strains are derivatives of the \$288C genetic background	*All strains are	derivative	nissar ieuzao urusao mensia oujzaKunivia es of the \$2880 genetic background	Genetics		

Table S2	Table S2. Primers Used in This Study									
Primer Sets	Gene	Forward Primer	Reverse Primer	Amplicon Size	Annealing Tm (°C)					
Α	iYMR325W	CAGTGTTTGTGGAGCATTTTCTG	AAGTGACGCATATTCTATACGACCC	235	56					
В	YOR285Wp4	GGGCAAACAAGTGTCCAGTTCTAA	CACACAGTGTCCCGTTAATTTCA	264	57					
С	YOR285Wp3	ATACAGCATACTAAGCGCTTTCCAG	CATTGCAAGTAGGAAAAGGACATACC	238	57					
D	YOR285Wp2	CATAAGGCCCAAATCCAGATATCA	CGTTTCTTAGTCACAAACCCTGA	248	56					
Е	YOR285Wp1	GGAAGGAAGTAAGGGGAGAATTT	ACCACATTAGGATCATGCTTTCC	239	56					
F	YOR285Wo1	CTCGATTGTTCATATTCCTGCTTCC	AAGTCAAGTTTATCACCCCCATGAG	261	58					
G	YDL218Wp5	ACTAATGAAGGGCCCGTTACAATC	TTGGCGAAGGTTATTGAAGGAAG	252	58					
н	YDL218Wp3	GTAAAAGTGAAAAAAGGGACGG	GTCATCAACGAGTATGCTTACTGGT	225	56					
I	YDL218Wp2	GGGGATATATACCCTTAAATTGACG	AAAACCGTAAACTTTCGTACTGAGA	244	55					
J	YDL218Wp1	AAGGTTCAACAAAGCGTCCGTT	TACCTCTATTTCCATAGGCGTGGA	229	56					
к	YDL218Wo	TACTGCTGACAGTCATAGAAGAGCATG	CGGTCCTAACATTGGTGTTATCGTA	260	58					
L	YNL092Wp5	ATAAGGCTCAAAACTGGGTCGAAG	GTCGTGTATTTTGTTCAGGACATGG	261	58					
м	YNL092Wp4	GAAAGCACCAGCTGTACAAAATCTC	GTTTGCTGTTGTTTTGCTTGCAG	265	57					
Ν	YNL092Wp3	CTACTCATGATCGCACAATTACCG	CCCGCCCCTAAAAAAGTGTATT	280	57					
ο	YNL092Wp2	ACAGTTCGTAACAACAGCTGGAAGA	TCAGATCCTCACCAATTTTTGCC	235	58					
Р	YNL092Wp1	ACTGTTATTTTGGTGTACCAGCGG	CTGAGATCGATGCCCATTTTTTC	220	58					
Q	YNL092Wo	CCTTCTCGTGGATCTTAGCAGAAT	ATCAACAAACGAGCCAGCACATA	259	58					
R	PRP12p5	AGGTAGTTGGCTTATCCAGTTTACCAG	ATGGTGTTCACTCGTGCTAGCAAA	250	58					
S	PRP12p4	TGACAGTGTTCGAAGTTTCACGA	GAACTTCGATCATTTCAATGCTGG	262	58					
т	PRP12p3	TCCTCCAACAAACAGTCGGTTATAG	GGTGTGTACATTGCAGTGCATCAT	259	58					
U	PRP12p2	TTTCACTTTTCGTCTTGACGTCC	CTGTATAGGCCCGCTATATTTTGGT	227	58					
v	PRP1201	ACTTACTCTCGTACTTCACTCGAGCTTC	ACAATTCTTGGCAGAAATGGCAC	254	58					
w	YDC1 p5	GAGTGATCCAACTTTCAAGTCGTTAC	CTAACTTAACATCTTTGCCTCTGGG	279	56					
х	YDC1 p4	TACAGCAAGAGTAGACGAAGCGATT	GGGACATGAAGTAATATGAGCCGA	229	57					
Y	YDC1 p3	GACACCTGCTGATTTTTACTGATCG	GAAGCATGCAATAGAAAGAAAGCAA	238	58					
z	YDC1 p2	CCTGAAAGCAACTTATCCATCAG	CACTAGGTTCTATGATATATCCTTTTGC	221	56					
AA	YDC1 o1	CACGTTCATGATTCATTTGCAAAG	GGAAAAATCCCCACCTCCATATAA	298	58					
AB	NUP159p4	TAACCGCTATTTGCAAGTGGGA	GAGAACGATAGAGACCAGCCAAAT	255	57					
AC	NUP159p2	TTATCGTGACCTACGACCAGTGT	GTGCGTTTCTCTGCTAAAATTG	260	56					
AD	NUP159p1	CTCAGGTTAATTTGTCTCCTCTCCAAC	GGCAGTTTTTCATTGAAGGAAGG	230	58					
AE	NUP15901	AGACCGATGACGAAGTTTCATAC	GTTCAGAATCCTGGGAAGGTTC	256	55					
AF	MRK1p2	CAAAGTCGTCCGATGAGGAACTAA	GAGATTATTTTCAAGTCCCTTCCCC	224	58					
AG	MRK1o	GCCGCGTGTTGAAATTAAATTCT	TCGACCTGGTTTGAGTAATTAGTGG	261	58					
AH	YNL116Wp	CCTTGCCCCAGTGTACACATATATAA	TGCGTTGCTATACTTTCTCGACTTC	272	58					
AI	YNL116Wo	CTTGATATATGCTGCAAACCAGCC	GCCAGCCTTTCTTATAATCGGTTC	226	58					
AJ	RIM11p	TACTACCAAGGGGTTCTGTAAGGCTT	GTTCTAGCGTTGCGTGATTAGTGTT	269	58					
AK	RIM11o	CAGAGGTTACGTCATTTCGTCCAT	CTGGTGCTCTATAGTACCGTGAACAA	259	58					
AL	RRP43 o1	AAATTGTAGTCTTGAGTCGCACTGG	TAATTGGCATTCGGGGTCTAACT	278	57					
АМ	RBK-RRP43 p1	GATGCCTGTGAAACTACTGTCAAAC	TATGCTGTTGGAACTTTGGGATG	259	57					
AN	RBK o1	CAGATCGTATATAACCCCTCACCTTTC	TCTCGAACCCAAAGTCATAACCAC	255	58					
AO	HSP104 p1	TGTGGCGAGAGTTTCATGGTTTA	ATTTGCAGTTCTTTGAGATGGGC	298	58					
AP	HSP104 o1	CTGCTCAATTAGCCAAGCGTTACT	ATGAAGCTTCCTTCTGCCTAGCTAAC	240	58					