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Supplemental Data

Distinct Pathways for snoRNA and mRNA Termination

Minkyu Kim, Lidia Vasiljeva, Oliver J. Rando, Alexander Zhelkovsky, Claire Moore, and Stephen Buratowski

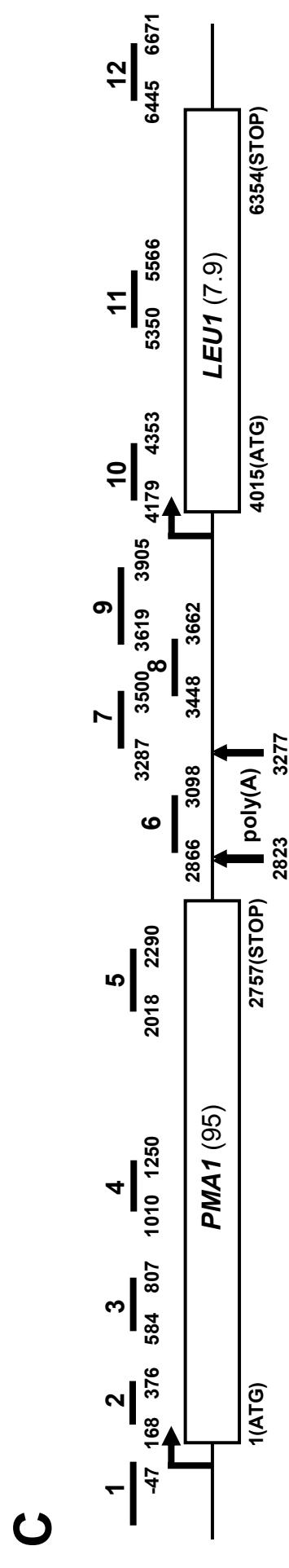
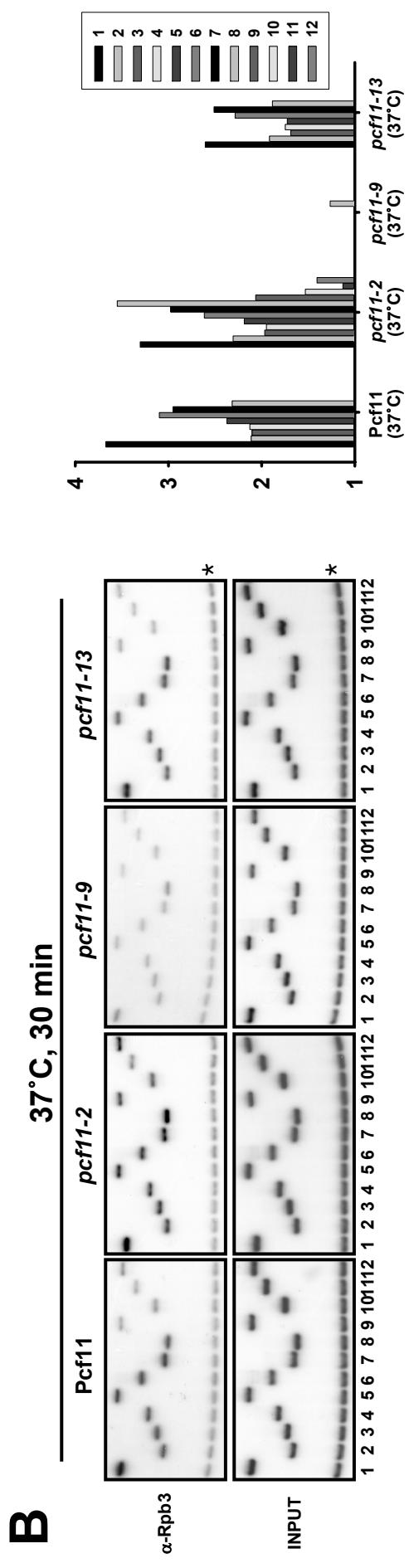
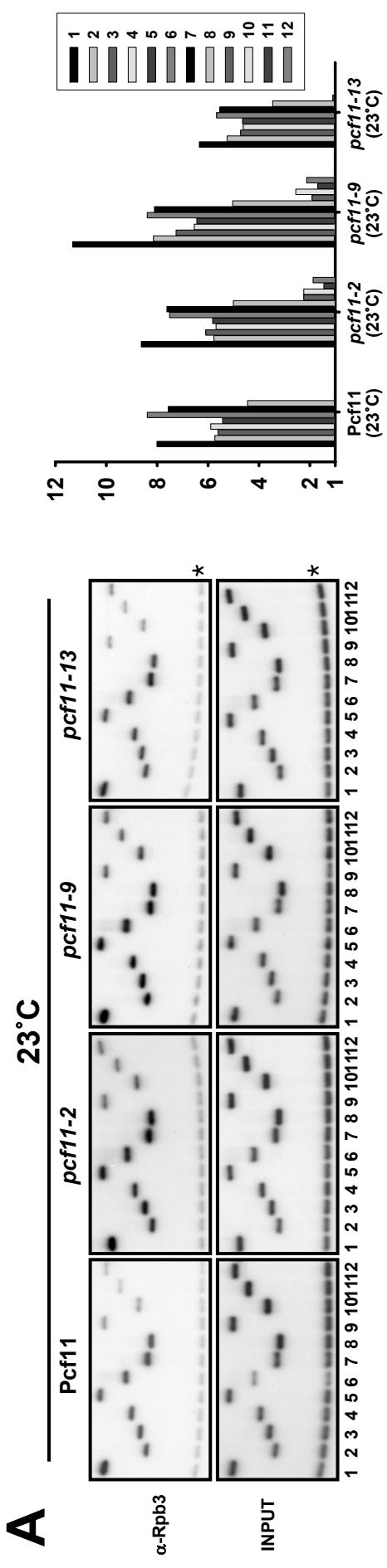


Figure S1. Effect of *PCF11* Mutant Alleles on Termination at *PMA1*

Chromatin used in Fig. 4 was used to assay Rpb3 on the *PMA1* gene. ChIP gels are shown at left and quantitation at right. (A) Permissive temperature. (B) Non-permissive temperature. (C) Schematic of *PMA1* and PCR primers used.

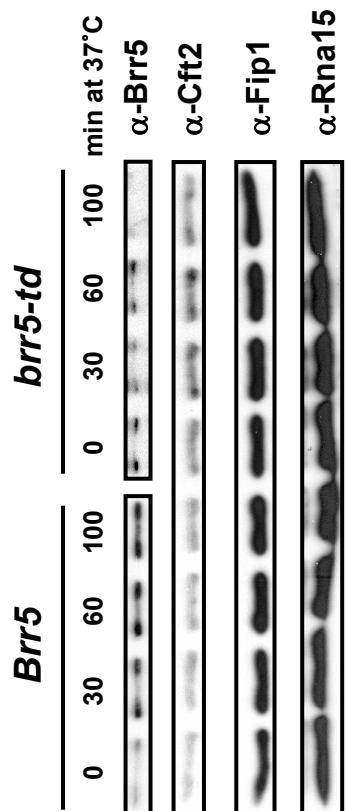
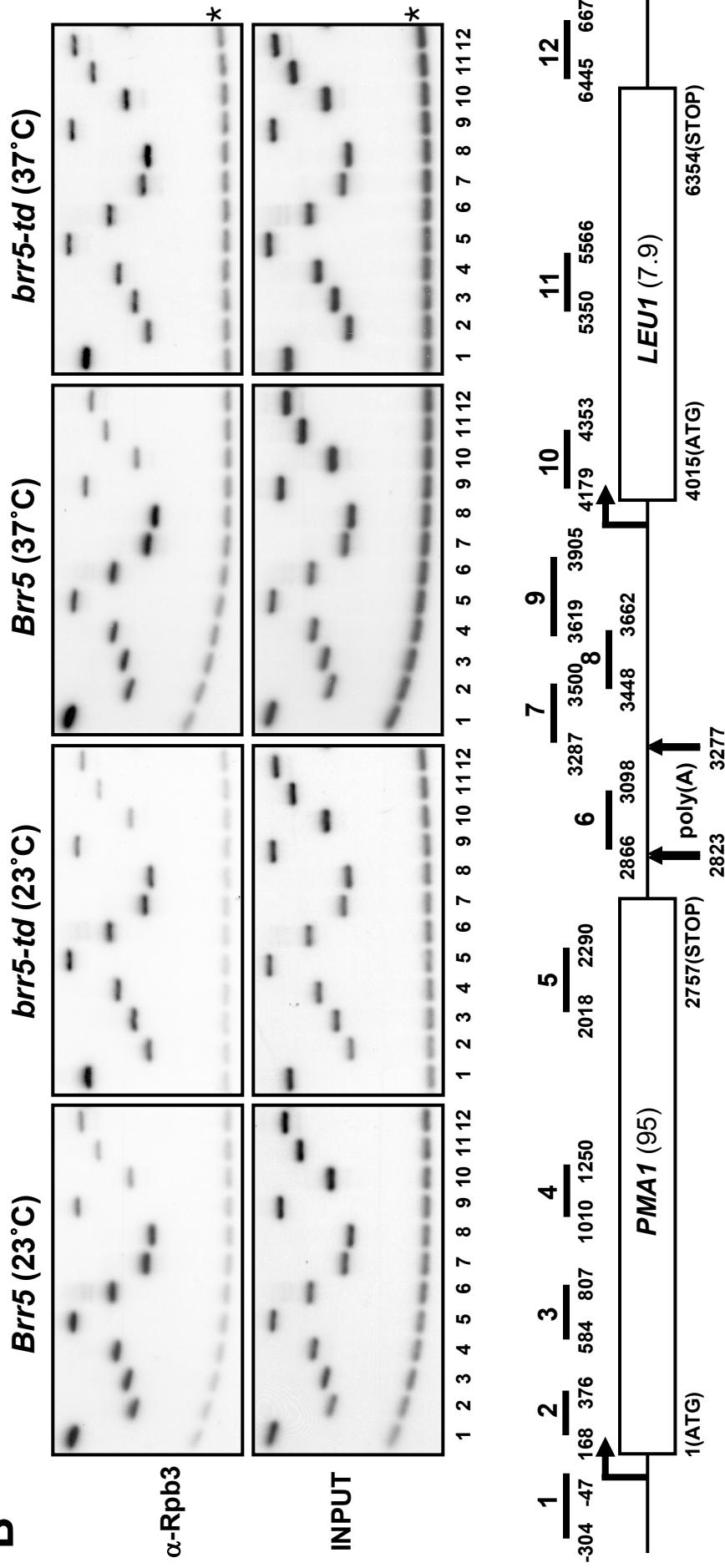
A**B**

Figure S2. Brr5 Depletion Causes Readthrough of the *PMA1* Gene Terminator

(A) Wild-type and temperature sensitive degron-tagged Brr5 (Brr5-td) strains were shifted to 37°C and incubated for 0, 30, 60, and 100 min. Extracts were prepared and analyzed for depletion of Brr5 by western blot. Brr5-td was depleted after 100 min, but other 3'-processing factors (Cft2, Fip1, and Rna15) were unaffected.

(B) Wild-type and brr5-td cells were shifted to 37°C for 100 min and α -Rpb3 ChIP assays were carried out on *PMA1* gene. The positions of PCR products used in the ChIP assays are shown in the scheme below the gel. Numbers in parentheses show the transcription rates (mRNA/hr) as in Figure 1.

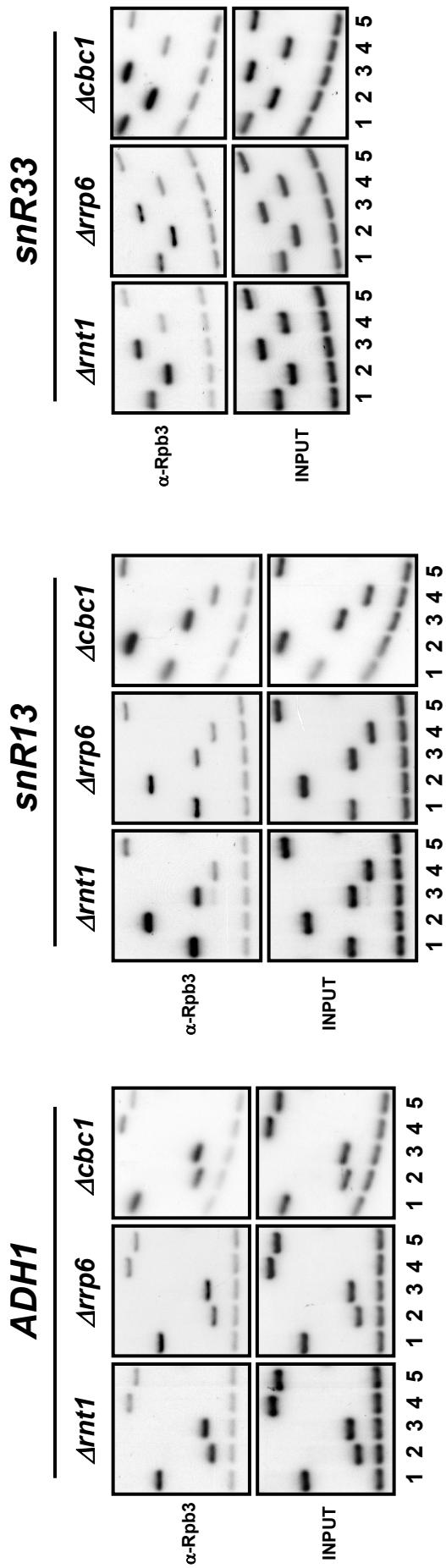


Figure S3.

Neither Rnt1, the nuclear exosome subunit Rrp6, nor the cap binding complex subunit Cbc1 are required for transcription termination at mRNAs or snoRNAs. $\Delta rnt1$, $\Delta rrp6$, or $\Delta cbc1$ cells were analyzed by α -Rpb3 ChIP assays on *ADH1*, *snR13*, and *snR33* genes.

Sen1 (37°C, 30 min) sen1-1 (37°C, 30 min)

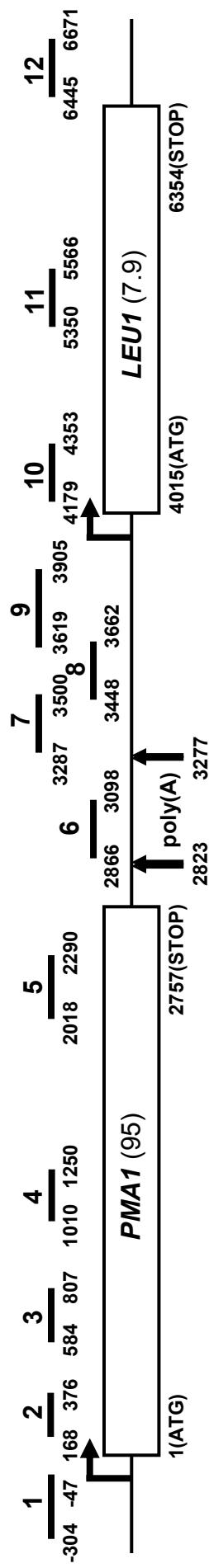
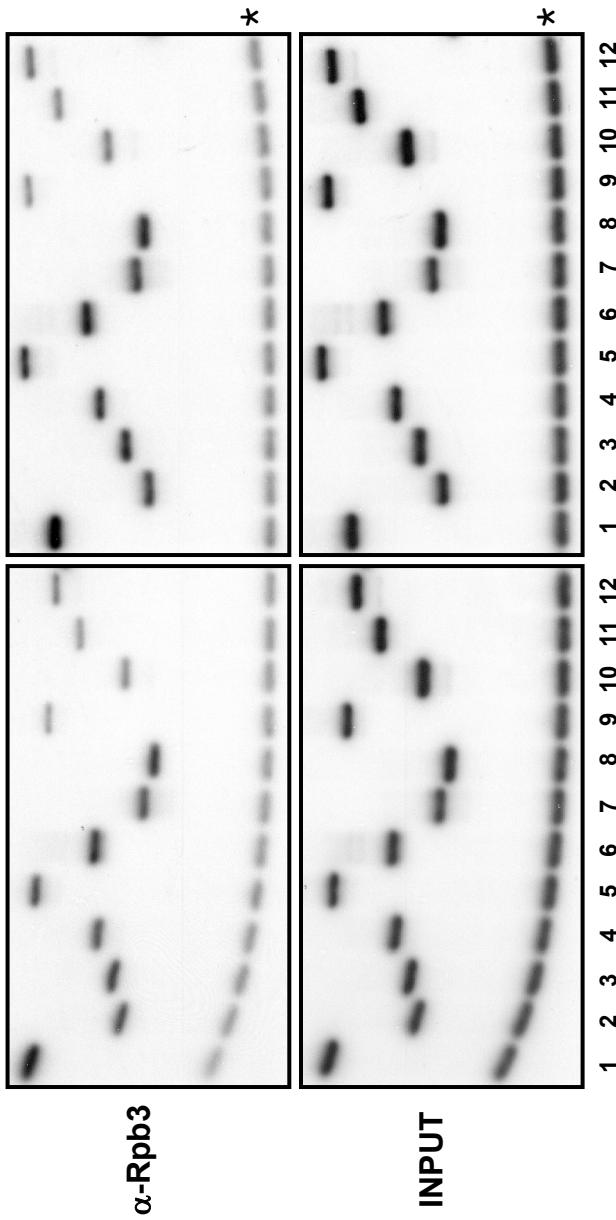


Figure S4. Sen1 Is Not Required for Transcription Termination of the *PMA1* Gene

Isogenic wild-type and *sen1*-1 cells were shifted to 37°C for 30 min, and α-Rpb3 ChIP assays were carried out on *PMA1* gene. The positions of PCR products used in the ChIP assays are shown in the scheme below the gel.

Table S1. Strains Used in This Study

	Genotype	Source
BY4741	MAT α , ura3Δ0, leu2Δ0, his3Δ1, met15Δ0	
FY23	MAT α , ura3-52, leu2Δ1, trp1Δ63	F. Winston
DAt1-2	MAT α , ura3-52, leu2Δ1, trp1Δ63, rai1-1	[1]
YSB1412	MAT α , ura3Δ0, leu2Δ0, trp1Δ::LEU2/KanR, his3Δ1, met15Δ0, rtt103Δ::KanMX	[2]
YSB1413	MAT α , ura3Δ0, leu2Δ0, trp1Δ::LEU2/KanR, his3Δ1, met15Δ0, rai1Δ::KanMX	[2]
SC1629	MAT α , ura3-52, leu2-3,112, trp1-289, arg4-, ade2-, RNA14-TAP::URA3	CellZone
SC0976	MAT α , ura3-52, leu2-3,112, trp1-289, arg4-, ade2-, RNA15-TAP::URA3	CellZone
SC0878	MAT α , ura3-52, leu2-3,112, trp1-289, arg4-, ade2-, PCF11-TAP::URA3	CellZone
SC0294	MAT α , ura3-52, leu2-3,112, trp1-289, arg4-, ade2-, CFT2-TAP::URA3	CellZone
W303-1B	MAT α , ura3-1, leu2-3,112, trp1-1, his3-11,15, can1-100, ade2-1	
YEN3	MAT α , ura3-1, leu2-3,112, trp1-0, his3-11,15, can1-100, ade2-1, HRP1-TAP::TRP1(<i>K. lactis</i>)	[3]
YEN25	MAT α , ura3-1, leu2-3,112, trp1-0, his3-11,15, can1-100, ade2-1, NRD1-TAP::TRP1(<i>K. lactis</i>)	[3]
YEN24	MAT α , ura3-1, leu2-3,112, trp1-0, his3-11,15, can1-100, ade2-1, NAB3-TAP::TRP1(<i>K. lactis</i>)	[3]
Sen1-Myc	MAT α , ura3-, leu2-, trp1-,his3-, lys2-, ade2-, cup1Δ, Sen1-Myc13::KanMX6	[4]
YSB2084	MAT α , ura3-52, leu2Δ1, trp1Δ63, Sen1-Myc13::KanMX6	This study
YEN21	MAT α , ura3-1, leu2-3,112, trp1-0, his3-11,15, can1-100, ade2-1, CBC1-TAP::TRP1(<i>K. lactis</i>)	[3]
YEN12	MAT α , ura3-1, leu2-3,112, trp1-0, his3-11,15, can1-100, ade2-1, PTI1-TAP::TRP1(<i>K. lactis</i>)	[3]
YEN10	MAT α , ura3-1, leu2-3,112, trp1-0, his3-11,15, can1-100, ade2-1, REF2-TAP::TRP1(<i>K. lactis</i>)	[3]
YF566	MAT α , ura3Δ0, leu2Δ0, his3Δ1, met15Δ0, RAT1-TAP::HIS3	[2]
LRB535	MAT α , ura3-52, leu2-3,112, his3Δ200	[5]
YZS84	MAT α , ura3-52, leu2-3,112, his3Δ200, ssu72-2	[5]
YDP170	MAT α , ura3-52, leu2-3,112, his3Δ1, trp1Δ1, ssu72Δ::LEU2 [SSU72, TRP1, CEN1/ARS]	[5]
YDP174	MAT α , ura3-52, leu2-3,112, his3Δ1, trp1Δ1, ssu72Δ::LEU2 [ssu72-3, TRP1, CEN1/ARS]	[5]
YJC610	MAT α , ura3Δ0, leu2Δ0, his3Δ1, met15Δ0, nrd1Δ::KAN [NRD1-HA, LEU2, CEN1/ARS]	[6]
YJC818	MAT α , ura3Δ0, leu2Δ0, his3Δ1, met15Δ0, nrd1Δ::KAN [nrd1-51, LEU2, CEN1/ARS]	[6]
YJC1107	MAT α , ura3Δ0, leu2Δ0, his3Δ1, met15Δ0, nrd1Δ::KAN [nrd1-102-HA, LEU2, CEN1/ARS]	[6]
FWY1971	MAT α , ura3-52, leu2-3,112, trp1-, pep4-3, SEN1	[7]
FWY1v556	MAT α , ura3-52, leu2-3,112, trp1-, pep4-3, sen1-1	[7]
BMA64a	MAT α , ura3-1, leu2-3,112, trp1Δ, his3-11,15, ade2-1, RNT1	[8]
rnt1Δ	MAT α , ura3-1, leu2-3,112, trp1Δ, his3-11,15, ade2-1, rnt1Δ::HIS3	[8]
YSB2002	MAT α , ura3-1, leu2-3,112, trp1Δ, his3-11,15, ade2-1, rnt1Δ::HIS3, rrp6Δ::KanMX	This study
YSB1962	MAT α , ura3Δ0, leu2Δ0, his3Δ1, met15Δ0, rrp6Δ::KanMX	This study
YSB1970	MAT α , ura3-1, trp1-1, rna14-1, rrp6Δ::KanMX	[9]

rna14-1 W	MAT α , ura3-1, trp1-1, rna14-1	[9]
rna15-2 W	MAT α , ura3-1, rna15-2	[9]
NA53	MATA, ura3-1, leu2-3,112, trp1 Δ , his3-11,15, ade2-1, pcf11 Δ ::TRP1 [pFL38-PCF11]	[10]
NA65	MATA, ura3-1, leu2-3,112, trp1 Δ , his3-11,15, ade2-1, pcf11-2	[10]
NA67	MATA, ura3-1, leu2-3,112, trp1 Δ , his3-11,15, ade2-1, pcf11-9	[10]
YMS800	MATA, ura3-1, leu2-3,112, trp1 Δ , his3-11,15, ade2-1, pcf11 Δ ::TRP1 [pNOPL-pcf11-13]	[10]
YAZ216	MATA, ura3-52, leu2 Δ 1, trp1 Δ 63, brr5::DHFR ^{ts} -BRR5 [pSE360-BRR5]	[11]
YAZ212	MATA, ura3-52, leu2 Δ 1, trp1 Δ 63, brr5::DHFR ^{ts} -BRR5	[11]

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Table S2. Oligos Used in This Study

Gene	Sequences
ADH1	#1 up (5'-TTC CTT CCT TCA TTC ACG CAC ACT-3')
	#1 low (5'-GTT GAT TGT ATG CTT GGT ATA GCT TG-3')
	#2 up (5'-TTC AAC CAA GTC GTC AAG TCC ATC TCT A-3')
	#2 low (5'-ATT TGA CCC TTT TCC ATC TTT TCG TAA-3')
	#3 up (5'-ACC GGC ATG CCG AGC AAA TGC CTG-3')
	#3 low (5'-CCC AAC TGA AGG CTA GGC TGT GG-3')
	#4 up (5'-CAA GTA ACT ACC AGC ACC ATA ACA CCG-3')
	#4 low (5'-CTC CGG CTT TTT ATT GGC TTG CTC-3')
	#5 up (5'-CAT TTA GGT CTA CTT CTG GTC GTG C-3')
	#5 low (5'-CAG ATG ATC TTA GTT TGT TAT GAG TG-3')
snR13	#1 up (5'-TTA TAA ATG GCA TCT CAA ATC GTC-3')
	#1 low (5'-GGT CAG ATA AAA GTA AAA AAA GGT AGC-3')
	#2 up (5'-CTG ACC TTT TAA CTT CCC CGT AG-3')
	#2 low (5'-CTG TCG CTT CCG TGT CTC TTG TCC TG-3')
	#3 up (5'-CAC GGA AGC GAC AGA AAG ACA GGG AG-3')
	#3 low (5'-CTA GAG GGA ATG TAT GTT GTT GAA G-3')
	#4 up (5'-GAG CAT CTG CTT TCC TTT CAC-3')
	#4 low (5'-ATC ACG GCG CCT CAT CTT TG-3')
	#5 up (5'-AAA ACC AAG AAA AGG ATA AAG AG-3')
	#5 low (5'-TCG GTG TCT ACA AAA TGA TAC GC-3')
snR33	#1 up (5'-CGG AAC GGT ACA TAA GAA TAG AAG AG-3')
	#1 low (5'-TTC AAT CTC TGC TCC TCC AAA C-3')
	#2 up (5'-GCC TAG CTT TTA CAC CGG TTT GAG TC-3')
	#2 low (5'-TAA AGA AAA CGA TAA GAA CTA ACC-3')
	#3 up (5'-CAA TTG CAG TAA CCA GAA GCG AAC AG-3')
	#3 low (5'-CGG CAG TGA TCT CGT TCC ATT G-3')
	#4 up (5'-GCT AAT AAA CCC GCA AGA AAA TC-3')
	#4 low (5'-AGA GTC CCA GGA TTT CAC AAG GTA G-3')
	#5 up (5'-GTA TTT CAC TTG CAC TAT TCT TCT ATC-3')
	#5 low (5'-TGG AAG ATG TGT TAG GAT TAG G-3')
Ch V	no ORF up (5'-GGC TGT CAG AAT ATG GGG CCG TAG TA-3')
	no ORF low (5'-CAC CCC GAA GCT GCT TTC ACA ATA C-3')