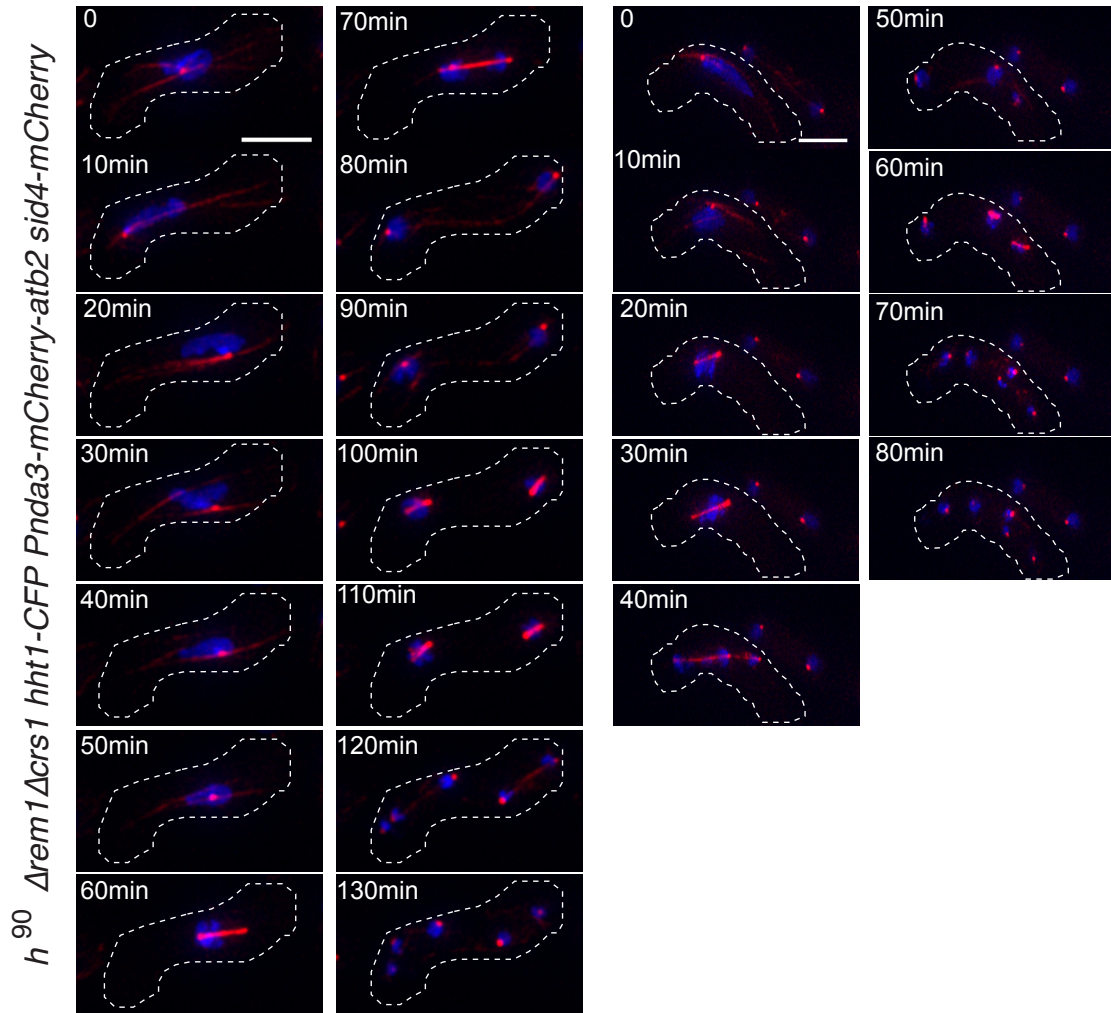
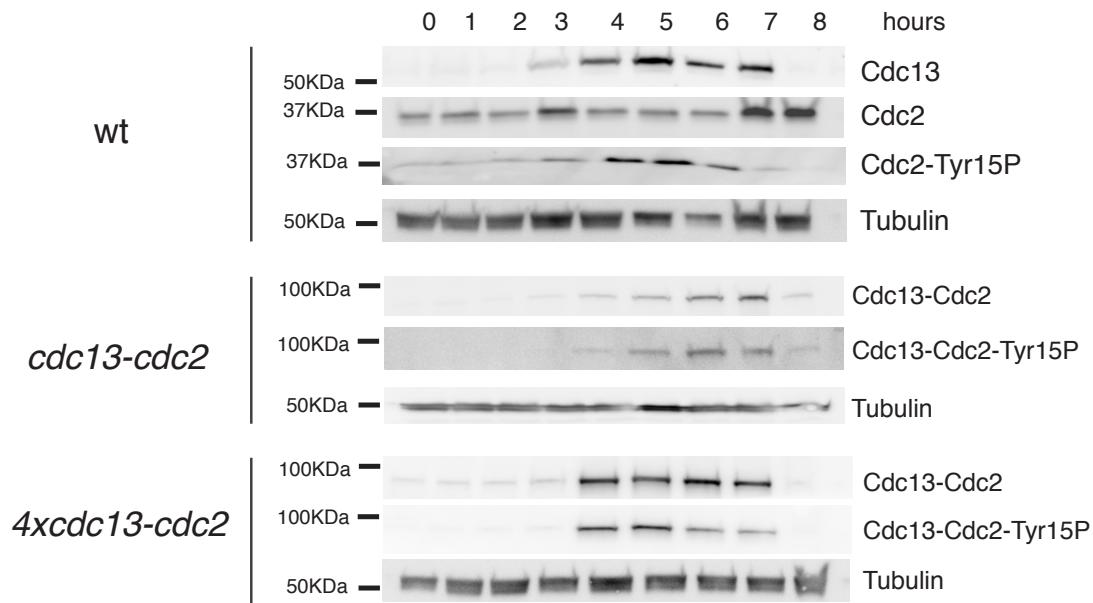


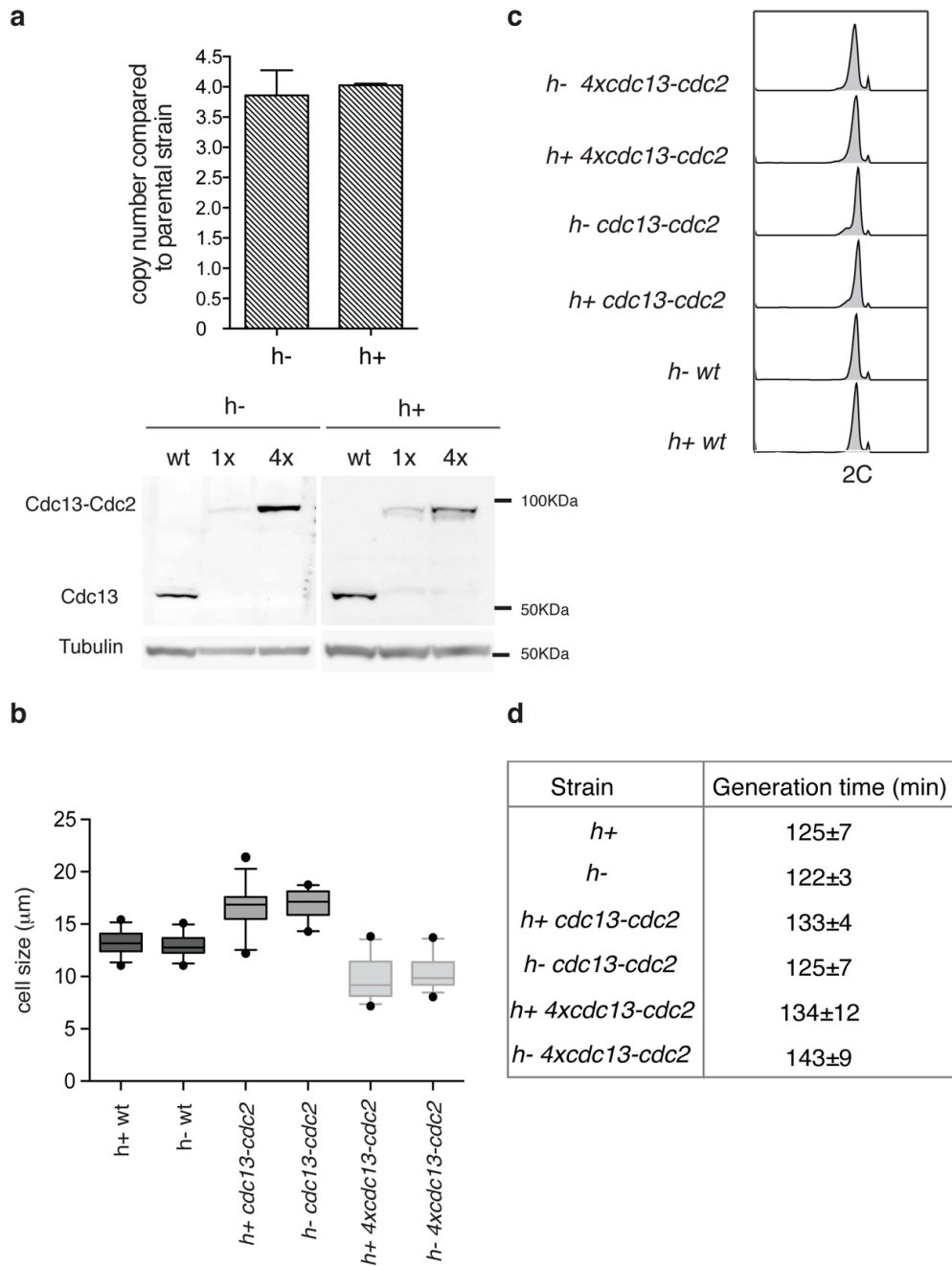
**Supplementary Figure 1. Synchronous azygotic meiosis in non-repressive conditions in an *nmt41-cdc13* strain.** Synchronous meiosis was chemically induced in **(a)**  $h^+/h^+$  *pat1as2* (wt) and **(b)**  $h^+/h^+$   $\Delta cdc13$  *nmt41-cdc13* *pat1as2* (*nmt41-cdc13*) homozygous diploid strains. Pat1 inactivation was achieved by adding 30 $\mu$ M of Nm-PP1 at 28°C to the culture after 17 hours of nitrogen starvation (time 0). No thiamine was added to the media to allow *cdc13* expression under *nmt41* promoter. DNA content (left panel) and the number of nuclei (right panel) were followed every hour.



**Supplementary Figure 2. *Δrem1Δcrs1* mutants show multipolar divisions during zygotic meiosis.** Time-lapse of *h<sup>90</sup> hhtc1-CFP atb1-mCherry sid4-mCherry rem1Δcrs1Δ* strain (Pi275) after meiotic induction. Images show a representative example of multipolar division during meiosis II (left panels) and meiosis I (right panels). These aberrant divisions were more frequent during meiosis II (45.4%) than during meiosis I (36.4%), while 18.2% of these zygotes showed defects in both meiosis I and II. Scale bars, 5μm.










**Supplementary Figure 3. Cdc13-Cdc2 fusion protein dynamics during synchronous meiosis.** Cells from the experiment described in Figure 7a and 7b were collected every hour to follow protein dynamics. A diploidized wild type strain was used as a control (Pi263). Protein samples were analysed by Western blot using anti-Cdc13 (SP4), Cdc2 (PSTAIRES) and Cdc2-Tyrosine15 phospho-specific antibodies in the case of wt extracts and anti-Cdc13 and Cdc2-Tyrosine15 phospho-specific antibodies for *cdc13-cdc2* samples.  $\alpha$ -Tubulin was used in both cases as loading control.

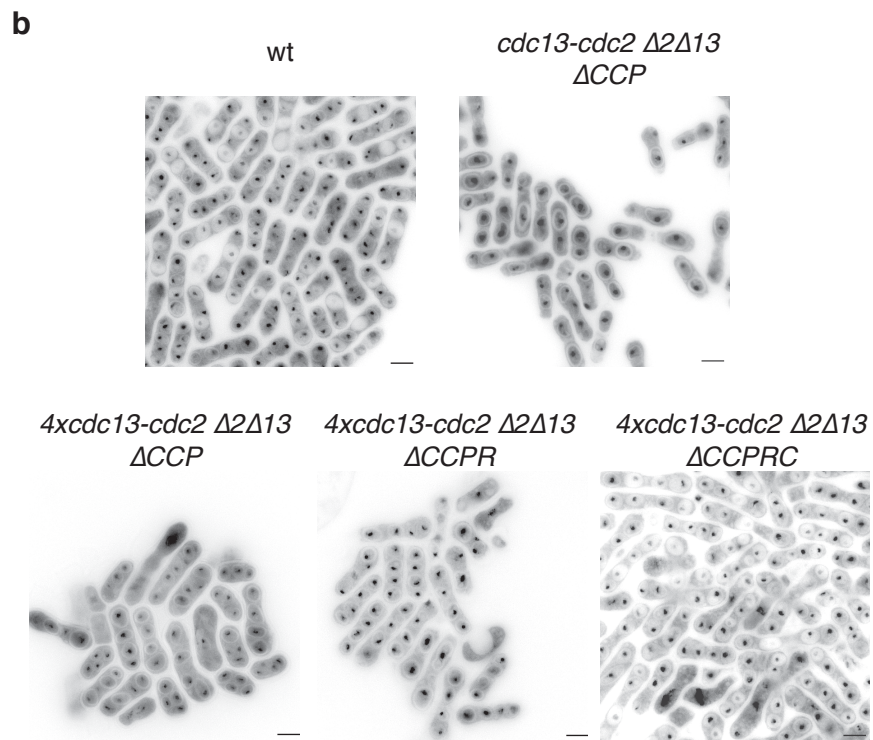


**Supplementary Figure 4. Characterization of the mitotic phenotype of *cdc13-cdc2* over-expression.** **a.** qPCR quantification of *cdc13-cdc2* copy number in *h+* (Pi46) and *h-* (Pi43) *cdc13-cdc2* over-expressing strains, normalized using the qPCR values of *h+* and *h- cdc13-cdc2* parental strains. Protein levels were analysed by Western blot in the same strains using anti-Cdc13 (SP4) and anti-tubulin (TAT1) antibodies, and including *h-* and *h+* wild type strains as controls. **b.** Size at division, (n=80 cells per strain, boxes represent 25–

75% of the data and the central lines indicate the median. Whiskers show 5–95% of the data. Dots represent the outer 10%). **c.** FACS profiles. **d.** generation times (mean of three experiments  $\pm$  standard deviation) of *h+* (PN4) and *h-* (PN1) wt, *cdc13-cdc2*  $\Delta 2$   $\Delta 13$   $\Delta CCP$  (*cdc13-cdc2*, *h+* DC235 and *h-* Pi4) and 4x *cdc13-cdc2*  $\Delta 2$   $\Delta 13$   $\Delta CCP$  (4x*cdc13-cdc2*, *h+* Pi46 and *h-* Pi43) strains grown at 32°C in YE4S.

**a**

	wt	<i>cdc13-cdc2</i> $\Delta 2\Delta 13\Delta CCP$	<i>4xcdc13-cdc2</i> $\Delta 2\Delta 13$		
			$\Delta CCP$	$\Delta CCPR$	$\Delta CCPRC$
> 4 DAPI stained bodies	1.8	1.2	3.5	2.6	3.7
	89.3	3.4	90.2	87	85.7
	0.9	2.2	-	2.6	0.5
	4.5	3.4	3.3	1	1.2
	1.3	6.7	-	1.6	1.7
	2.2	82	3	4.1	5.6
	-	-	-	1.1	0.5
	-	1.1	-	-	1.1



**Supplementary Figure 5. Frequency of aberrant nuclear divisions in Cdc13-Cdc2 fusion protein strains during meiosis.** Asci from *azygotic* synchronous meiosis were stained with DAPI and observed by microscopy. **a.** Phenotypic defects considered (based on <sup>20</sup>) and percentage of asci in each of them. At least 400 asci were scored for each strain. **b.** Representative pictures of each strain after 14 hours of meiotic induction. Scale bars, 5 $\mu$ m.

**Supplementary Table 1. Strains used in this study**

<b>Name</b>	<b>Genotype</b>	<b>Source</b>
PN1	<i>h<sup>-</sup> 972</i>	Lab collection
PN4	<i>h<sup>+</sup> 975</i>	Lab collection
PN71	<i>h<sup>-</sup> ade6-M210 leu1-32</i>	Lab collection
PN1394	<i>h<sup>-</sup> Δcig1 ::ura4+ Δcig2 ::ura4+ ade6- leu1-32 ura4-D18</i>	Lab collection
PN1400	<i>h<sup>-</sup> Δcig1 ::ura4+ Δcig2 ::ura4+ ura4-D18</i>	Lab collection
PN1401	<i>h<sup>+</sup> Δcig1 ::ura4+ Δcig2 ::ura4+ ura4-D18</i>	Lab collection
PN1926	<i>h<sup>+</sup> Δcig2 ::ura4+ ura4-D18</i>	Lab collection
PN1931	<i>h<sup>-</sup> Δcig2 ::ura4+ leu1-32 ura4-D18</i>	Lab collection
PN1942	<i>h<sup>-</sup> Δcig2 ::ura4+ ura4-D18</i>	Lab collection
DC177	<i>h<sup>-</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 ura4-D18</i>	[4]
DC210	<i>h<sup>+</sup> leu1 ::Pcdc13::cdc13ts-L-cdc2as::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 ura4-D18</i>	[4]
DC235	<i>h<sup>+</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4+ ura4-D18</i>	[4]
Pi1	<i>h<sup>-</sup> Δcig1::ura4 Δcig2::ura4 Δpucl::ura4 ura4-D18</i>	This work
Pi4	<i>h<sup>-</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4+ ura4-D18</i>	This work
Pi5	<i>h<sup>+</sup> Δcig1::ura4 Δcig2::ura4 Δpucl::ura4 ura4-D18</i>	This work
Pi43	<i>h<sup>-</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4 3x(ura4+::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) ura4-D18</i>	This work
Pi46	<i>h<sup>+</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4 3x(ura4+::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) ura4-D18</i>	This work
Pi130	<i>h<sup>-</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4 Δrem1::hphNT1 3x(ura4+:: Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) ura4-D18</i>	This work
Pi132	<i>h<sup>+</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4 Δrem1::hphNT1 3x(ura4+:: Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) ura4-D18</i>	This work
Pi155	<i>h<sup>-</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4 Δrem1::hphNT1 Δcrs1::hphNT1 3x(ura4+:: Pcdc13::cdc13-L-cdc2::cdc13</i>	This work



	<i>3'UTR::ura4+::Scleu2) ura4-D18</i>	
Pi158	<i>h<sup>+</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl::ura4 Δrem1::hphNT1 Δcrs1::hphNT1 3x(ura4+:: Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) ura4-D18</i>	This work
163	<i>h+ Δrem1::hphNT1</i>	This work
166	<i>h- Δcrs1::hphNT1</i>	This work
Pi175	<i>h<sup>-</sup> Δrem1::hphNT1 Δcrs1::hphNT1</i>	This work
Pi176	<i>h<sup>+</sup> Δrem1::hphNT1 Δcrs1::hphNT1</i>	This work
Pi211	<i>h<sup>+</sup> Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 Δrem1::natNT2 Δcrs1::hphNT1 ura4- D18</i>	This work
Pi230	<i>h<sup>+</sup>/h<sup>-</sup> Δrem1::hphNT1/ Δrem1::hphNT1 Δcrs1::hphNT1/ Δcrs1::hphNT1 cut11- GFP::kanmx6/ cut11-mCherry::natmx6</i>	This work
Pi234	<i>h<sup>90</sup> hht1-CFP:his+ Pnda3-mCherry-atb2:aur1R Sid4-mCherry::Scleu2 leu1-32 his3-D1 ura4-D18</i>	This work
Pi236	<i>h<sup>+</sup> Δcig1::ura4 Δcig2::ura4 Δpucl::ura4 Δrem1::natNT2 ura4-D18</i>	This work
Pi237	<i>h- Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 Δcrs1::hphNT1</i>	This work
Pi240	<i>h<sup>+</sup> Δcig1::ura4 Δcig2::ura4 Δpucl::ura4 Δrem1::natNT2 Δpat1::pat1as2::hph</i>	This work
Pi242	<i>h<sup>-</sup> Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 Δrem1::natNT2 Δcrs1::hphNT1 ura4-D18</i>	This work
Pi251	<i>h<sup>-</sup> Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 Δrem1::natNT2 ura4-D18</i>	This work
Pi253	<i>h<sup>+</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13 ::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4+ Δpat1::pat1as2::hph ura4-D18</i>	This work
Pi259	<i>h<sup>+</sup> Δcig1::ura4 Δcig2::ura4 Δpucl::ura4 Δpat1::pat1as2::hph ura4-D18</i>	This work
Pi260	<i>h<sup>+</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2 ::kanMX6 Δcdc13 ::natMX6 Δcig1 ::ura4+ Δcig2 ::ura4+ Δpucl ::ura4 3x(ura4+:: Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) Δpat1::pat1as2::hph ura4-D18</i>	This work
Pi263	<i>h<sup>+</sup> Δpat1::pat1as2::hph</i>	This work
Pi275	<i>h<sup>90</sup> hht1-CFP:his+ Pnda3-mCherry-atb2:aur1R Sid4-mCherry::Scleu2 Δrem1::natNT2 Δcrs1::natNT2 leu1-32 his3-D1 ura4-D18</i>	This work
Pi278	<i>h<sup>+</sup> Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 Δrem1::natNT2 Δcrs1::hphNT1 Δpat1::pat1as2::hph</i>	This work
Pi279	<i>h<sup>-</sup> leu1 ::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2::kanMX6 Δcdc13::natMX6 Δcig ::ura4+ Δcig2::ura4+ Δpucl::ura4 Δrem1::hphNT1</i>	This work



	<i>3x(ura4+::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) Δpat1::pat1as2::hph ura4-D18</i>	
Pi283	<i>h<sup>+</sup> Δrem1::hphNT1 Δcrs1::hphNT1 Δpat1::pat1as2::hph</i>	This work
Pi285	<i>h<sup>+</sup> leu1::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+ Δcdc2::kanMX6 Δcdc13::natMX6 Δcig1::ura4+ Δcig2::ura4+ Δpucl::ura4 Δrem1::hphNT1 Δcrs1::hphNT1 3x(ura4+::Pcdc13::cdc13-L-cdc2::cdc13 3'UTR::ura4+::Scleu2) Δpat1::pat1as2::hph</i>	This work
Pi292	<i>h<sup>+</sup> Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 Δcrs1::hphNT1</i>	This work
Pi296	<i>h<sup>+</sup> Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 Δcrs1::hphNT1 Δpat1::pat1as2::hph</i>	This work
Pi313	<i>h<sup>+</sup> Δcdc13::ura4 intREP41-cdc13::Scleu2 Δpat1::pat1as2::hph</i>	This work
Pi327	<i>h- Δcrs1::hphNT1 ade6M26</i>	This work
Pi328	<i>h+ Δcrs1::hphNT1 leu1-32 ade6M210</i>	This work
Pi333	<i>h+ ade6M26</i>	This work
Pi334	<i>h- Δcig1::ur4 Δcig2::ura4 Δpucl::ura4 leu1-32</i>	This work
Pi335	<i>h+ Δcig1::ur4 Δcig2::ura4 pat1as2::hph</i>	This work
Pi336	<i>h+ Δcig2::ura4 pat1as2::hph</i>	This work
Pi337	<i>h- Δrem1::hphNT1</i>	This work
Pi339	<i>h+ Δcrs1::hphNT1</i>	This work
Pi340	<i>h+ Δrem1::hphNT1 ade6M26</i>	This work
Pi344	<i>h- Δrem1::hphNT1 ade6M210 leu1-32</i>	This work
Pi346	<i>h- ade6M210 leu1-32 Δcrs1::hphNT1 Δrem1::hphNT1</i>	This work
Pi348	<i>h+ ade6M26 leu1+ Δcrs1::hphNT1 Δrem1::hphNT1</i>	This work

**Supplementary Table 2. List of primers used for quantitative PCR.**

Primmer name	Sequence
<i>fw-cdc13</i>	ATCATTGCGGGTATGCTCTC
<i>rv-cdc13</i>	CTGAAGGGCACATCACCTC
<i>fw-act1</i>	CGTCGCTTTGGACTTTGAGC
<i>rv-act1</i>	TACCAGGTCCGCTCTCATCA