

## Supplemental Experimental Procedures

Supplementary Materials include 1 table, 5 figures, extended experimental procedures, and references.

**Table S1. *Saccharomyces cerevisiae* strains used in this study.** The strains are listed in alphabetical/number ascending order order.

Strain	Genotype	Source
FY0090	<i>MATa his3-200 leu2-3, 112 lys2-801 trp1-1 (am) ura3-52</i> (DF5 background, wt)	Lab collection
FY0108	<i>MATa his3-200 leu2-3, 112 lys2-801 trp1-1 (am) ura3-52</i> (DF5 background, wt)	Lab collection
FY0113	<i>MAT his3-200 leu2-3, 112 lys2-801 trp1-1 (am) ura3-52</i> (DF5 background, wt)	Lab collection
FY1000	<i>MATa ade2-1 can1-100 his3-11,-15 leu2-3,112 trp1-1 ura3-1</i> <i>RAD5+</i> (W303 background, wt)	Lab collection
FY1060	W303 Mata <i>sgs1 ::HisMX</i>	This study
FY1110	W303 Mata <i>ura3::URA3/GPD-TK(7X)</i>	Lab collection
FY1296	<i>MATa ade2-1 can1-100 his3-11,-15 leu2-3,112 trp1-1 ura3-1</i> <i>RAD5+</i> (W303 background, wt)	Lab collection
FY1487	W303 Mata but <i>arg4 BglIII URA3::arg4 EcoRV::ura3-1 pol30-RR rad5-535</i>	Lab collection
FY1490	DF5 Mata <i>ubc13 ::HPHNT1</i>	Lab collection
FY1687	W303 Mata <i>Hmo1-6PK::HIS3</i>	Lab collection
HY0516	DF5 Mat <i>rad5 ::HphMX4</i>	Lab collection
HY0518	DF5 Mat <i>mms2 ::HPHMX4</i>	This study
HY1507	W303 Mata <i>hmo1 ::KanMX6</i>	This study
HY1508	DF5 Mat <i>hmo1 ::KanMX6</i>	This study
HY1518	DF5 Mat <i>rad5 ::HphMX4 hmo1 ::His3MX4</i>	This study
HY1519	DF5 Mat <i>mms2 ::HPHMX4 hmo1 ::His3MX6</i>	This study
HY1976	W303 Mata <i>ELG1-10FLAG::KanMX4</i>	Lab collection
HY2003	W303 Mata <i>elg1 ::KanMX</i>	Lab collection
HY2174	W303 Mata <i>ura3-1::ADH1-OsTIR1-9 Myc (URA3)</i> <i>hmo1::hmo1-AID (KanMX4)</i>	This study
HY2176	W303 Mata <i>ura3-1::ADH1-OsTIR1-9 Myc (URA3)</i> <i>hmo1::hmo1-aid(kanMX) sgs1 ::HPHMX4</i>	This study
HY2224	DF5 Mata <i>rad17 ::HIS3</i>	Lab collection
HY2651	DF5 Mata <i>rad51 ::loxP-KANMX-loxP</i>	Lab collection
HY2682	W303 Mat <i>rad5 ::HPHMX4</i>	This study
HY2706	DF5 Mata <i>pol32 ::klTRP1 hmo1 ::KanMX6</i>	This study
HY2714	DF5 Mata <i>hmo1 ::KanMX6</i>	This study

<b>HY2719</b>	<b>DF5</b> Mata <i>pol32 ::klTRP1</i>	This study
<b>HY3362</b>	<b>W303</b> Mata <i>top2-1</i>	Lab collection
<b>HY3363</b>	<b>W303</b> Mata <i>top2-1 hmo1 ::His3MX4</i>	This study
<b>HY3632</b>	<b>W303</b> Mata <i>rad5 ::HPHMX4 hmo1 ::HIS3</i>	This study
<b>HY3633</b>	<b>W303</b> Mat <i>rad5 ::HPHMX4 hmo1 ::HisMX</i>	This study
<b>HY3662</b>	<b>W303</b> Mata <i>hmo1 ::KanMX6</i>	This study
<b>HY3664</b>	<b>W303</b> Mata <i>rad5 ::HPHMX4</i>	This study
<b>HY3732</b>	<b>W303</b> Mata <i>hmo1-C 64::KanMX4</i>	This study
<b>HY3735</b>	<b>W303</b> Mata <i>rad5 ::HPHMX4hmo1-C 64::KanMX4</i>	This study
<b>HY3800</b>	<b>W303</b> Mata <i>Rfa1-6PK::HIS3</i>	This study
<b>HY3890</b>	<b>W303</b> Mata <i>top2-1 hmo1-C 64::KanMX4</i>	This study
<b>HY3892</b>	<b>W303</b> Mata <i>top2-1 hmo1-C 22::KanMX4</i>	This study
<b>HY3893</b>	<b>DF5</b> Mata <i>hmo1-C 64::KanMX4</i>	This study
<b>HY3895</b>	<b>DF5</b> Mata <i>hmo1-C 22::KanMX4</i>	This study
<b>HY3936</b>	<b>DF5</b> Mata <i>rad5 ::NATN2 rad17 ::HIS3</i>	This study
<b>HY3939</b>	<b>DF5</b> Mata <i>rad5 ::NATN2 hmo1 ::KanMX4 rad17 ::HIS3</i>	This study
<b>HY3941</b>	<b>DF5</b> Mata <i>hmo1 ::KanMX4 rad17 ::HIS3</i>	This study
<b>HY3943</b>	<b>DF5</b> Mat <i>rad5 ::NATN2 hmo1 ::KanMX4 rad51 ::URA3</i>	This study
<b>HY3944</b>	<b>DF5</b> Mat <i>rad5 ::NATN2 hmo1 ::KanMX4 ubc13 ::HPHMX</i>	This study
<b>HY3946</b>	<b>DF5</b> Mat <i>hmo1 ::KanMX4 rad51 ::URA3</i>	Lab collection
<b>HY3948</b>	<b>DF5</b> Mat <i>rad5 ::NATN2 rad51 ::URA3</i>	Lab collection
<b>HY3956</b>	<b>DF5</b> Mata <i>hmo1 ::KanMX4</i>	This study
<b>HY3957</b>	<b>DF5</b> Mat <i>hmo1 ::KanMX4</i>	This study
<b>HY3958</b>	<b>DF5</b> Mata <i>rad5 ::NATN2 ubc13 ::HPHMX</i>	This study
<b>HY3959</b>	<b>DF5</b> Mat <i>hmo1 ::KanMX4 ubc13 ::HPHMX4</i>	This study
<b>HY3960</b>	<b>DF5</b> Mata <i>hmo1 ::KanMX4 ubc13 ::HPHMX4</i>	This study
<b>HY4017</b>	<b>W303</b> Mata <i>sgs1::pADH1-tc3-3xHA-Sgs1 (KanMX)</i>	Lab collection
<b>HY4056</b>	<b>DF5</b> Mata <i>rad5 ::NATN2, elg1 ::HIS3</i>	This study
<b>HY4073</b>	<b>DF5</b> Mata <i>rad5 ::NATN2, elg1 ::HIS3, hmo1 ::KanMX4</i>	This study
<b>HY4091</b>	<b>DF5</b> Mata <i>rad5 ::NATN2, hmo1-C 64::KanMX4</i>	This study
<b>HY4098</b>	<b>DF5</b> Mata <i>rad5 ::NATN2</i>	This study
<b>HY4101</b>	<b>DF5</b> Mat <i>hmo1-C 64::KanMX4</i>	This study
<b>HY4103</b>	<b>DF5</b> Mat	This study
<b>HY4104</b>	<b>DF5</b> Mata <i>his3-delta200 leu2-3,112 lys2-801 trp1-1 (am) ura3-52 (DF5 background, wt)</i>	This study
<b>HY4108</b>	<b>DF5</b> Mata <i>rad5 ::NATN2 hmo1-C 22::KanMX4</i>	This study
<b>HY4113</b>	<b>DF5</b> Mat <i>hmo1-C 22::KanMX4</i>	This study
<b>HY4127</b>	<b>DF5</b> Mata <i>rad5 ::NATN2, hmo1 ::KanMX4</i>	This study
<b>HY4303</b>	<b>W303</b> Mata <i>sgs1 ::NATN2hmo1-C 64::KanMX4</i>	This study
<b>HY4320</b>	<b>W303</b> Mata <i>sgs1::pADH1-tc3-3xHA-Sgs1 (NATN2) elg1 ::KanMX4</i>	This study
<b>HY4324</b>	<b>W303</b> Mata <i>S-Hmo1::natNT2</i>	This study
<b>HY4325</b>	<b>W303</b> Mata <i>ura3-1::ADH1-OsTIR1-9 Myc (URA3) G2-</i>	This study

*Hmo1::natNT2*

<b>HY4352</b>	<b>W303</b> Mata <i>sgs1::pADH1-tc3-3xHA-Sgs1 (HPHMX4)</i> <i>srs2::KANMX</i>	This study
<b>HY4355</b>	<b>W303</b> Mata <i>S-Hmo1::natNT2 rad5::HPHMX4</i>	This study
<b>HY4359</b>	<b>W303</b> Mata <i>ura3-1::ADH1-OsTIR1-9 Myc (URA3) G2-</i> <i>Hmo1::natNT2 rad5::HPHMX4</i>	This study
<b>HY4416</b>	<b>DF5</b> Mata <i>rev3::HIS3</i>	This study
<b>HY4417</b>	<b>DF5</b> Mata <i>ubc13::HPHMX4 rev3::HIS3</i>	This study
<b>HY4439</b>	<b>DF5</b> Mat <i>hmo1::KanMX4 rev3::HIS3</i>	This study
<b>HY4440</b>	<b>DF5</b> Mata <i>ubc13::HPHMX4 hmo1::KanMX4 rev3::HIS3</i>	This study
<b>IP1126</b>	<b>DF5</b> Mat <i>rad5::KanMX4, srs2::klTRP1, hmo1::KanMX4</i>	This study
<b>IP1128</b>	<b>DF5</b> Mat <i>rad5::KanMX4, hmo1::KanMX4</i>	This study
<b>IP1130</b>	<b>DF5</b> Mat <i>srs2::klTRP1, hmo1::KanMX4</i>	This study
<b>IP1136</b>	<b>DF5</b> Mat <i>hmo1::KanMX6 pol32::klTRP1</i>	This study
<b>IP1138</b>	<b>DF5</b> Mat <i>hmo1::KanMX6 rad5::natNT2 pol32::klTRP1</i>	This study
<b>Y1223</b>	<b>DF5</b> Mat <i>rad5::KanMX4</i>	Lab collection
<b>Y1572</b>	<b>DF5</b> Mat <i>srs2::klTRP1</i>	Lab collection
<b>Y1576</b>	<b>DF5</b> Mat <i>rad5::KanMX4, srs2::klTRP1</i>	Lab collection
<b>Y1630</b>	<b>W303</b> Mata <i>siz1::His3MX6</i>	Lab collection
<b>Y2593</b>	<b>DF5</b> Mat <i>pol32::klTRP1</i>	Lab collection
<b>Y2620</b>	<b>DF5</b> Mata <i>ubc13::hphNT1</i>	Lab collection
<b>Y2663</b>	<b>DF5</b> Mata <i>rad5::natNT2 pol32::klTRP1</i>	Lab collection