

**Table S1 Strains and plasmids**

| Name        | Description  |
|-------------|--|
| W1588-4A    | <i>MAT<math>\alpha</math> ade2-1 can1-100 his3-11,15 leu2-3,112 trp1-1 ura3-1 RAD5</i>   |
| W5909-1B    | <i>MAT<math>\alpha</math> ADE2 TRP1 lys2<math>\Delta</math></i>  |
| W7644       | <i>MAT<math>\alpha</math>/<math>\alpha</math> sae2::kanMX/SAE2 sgs1::HIS3/SGS1</i>   |
| W7645       | <i>MAT<math>\alpha</math>/<math>\alpha</math> sae2::kanMX/SAE2 sgs1-D664<math>\Delta</math>/SGS1<br/>leu2<math>\Delta</math>EcoR1::URA3::leu2<math>\Delta</math>Bstell</i> |
| W7348       | <i>MAT<math>\alpha</math>/<math>\alpha</math> mre11::LEU2/MRE11 sgs1::HIS3/SGS1</i>  |
| KBY31       | <i>MAT<math>\alpha</math>/<math>\alpha</math> mre11::LEU2/MRE11 sgs1-D664<math>\Delta</math>/SGS1</i>  |
| W7634       | <i>MAT<math>\alpha</math>/<math>\alpha</math> xrs2::URA3/XRS2 sgs1::HIS3/SGS1</i>  |
| KBY29       | <i>MAT<math>\alpha</math>/<math>\alpha</math> xrs2::URA3/XRS2 sgs1-D664<math>\Delta</math>/SGS1</i>  |
| W7636       | <i>MAT<math>\alpha</math>/<math>\alpha</math> rad50::URA3/RAD50 sgs1::HIS3/SGS1</i>  |
| KBY30       | <i>MAT<math>\alpha</math>/<math>\alpha</math> rad50::URA3/RAD50 sgs1-D664<math>\Delta</math>/SGS1</i>  |
| LSY1709-9D  | <i>MAT<math>\alpha</math> rad51::LEU2 ade2-n::TRP1::ade2-l-Scel lys2::GAL-l-Scel</i>   |
| W8823-4C    | <i>MAT<math>\alpha</math> sgs1::hphMX4 rad51::LEU2 ade2-n::TRP1::ade2-l-Scel lys2::GAL-l-Scel</i>  |
| LSY1983-16B | <i>MAT<math>\alpha</math> rad51::LEU2 ade2-n::TRP1::ade2-l-Scel lys2::GAL-l-Scel sgs1::hphMX4</i>  |
| LSY1983-32B | <i>MAT<math>\alpha</math> rad51::LEU2 ade2-n::TRP1::ade2-l-Scel lys2::GAL-l-Scel exo1::HIS3<br/>sgs1::hphMX4</i>   |
| LSY2090-5B  | <i>MAT<math>\alpha</math> rad51::LEU2 ade2-n::TRP1::ade2-l-Scel lys2::GAL-l-Scel sgs1-D664<math>\Delta</math></i>  |
| LSY2090-4D  | <i>MAT<math>\alpha</math> rad51::LEU2 ade2-n::TRP1::ade2-l-Scel lys2::GAL-l-Scel exo1::HIS3<br/>sgs1-D664<math>\Delta</math></i>   |
| LSY2172-24C | <i>MAT<math>\alpha</math> rad51::LEU2 ade3::GAL-HO</i>   |
| LSY2172-17C | <i>MAT<math>\alpha</math> rad51::LEU2 sgs1::hphMX4 ade3::GAL-HO</i>  |
| LSY2173-25D | <i>MAT<math>\alpha</math> rad51::LEU2 exo1::HIS3 ade3::GAL-HO</i>  |
| LSY2208-4B  | <i>MAT<math>\alpha</math> rad51::LEU2 sgs1::D664<math>\Delta</math> ade3::GAL-HO</i>   |
| LSY2179-11B | <i>MAT<math>\alpha</math> rad51::LEU2 exo1::HIS3 sgs1::hphMX4 ade3::GAL-HO</i>   |
| LSY2208-3C  | <i>MAT<math>\alpha</math> rad51::LEU2 sgs1-D664<math>\Delta</math> exo1::HIS3 ade3::GAL-HO</i>   |
| W9208-10A   | <i>MAT<math>\alpha</math> yku70::LEU2</i>  |
| W5927-20A   | <i>MAT<math>\alpha</math> sgs1-D664<math>\Delta</math></i>   |
| W4318-1D    | <i>MAT<math>\alpha</math> sae2::KanMX bar1::LEU2</i>   |
| W9208-17C   | <i>MAT<math>\alpha</math> yku70::LEU2 sgs1-D664<math>\Delta</math> leu2<math>\Delta</math>EcoR1::URA3::leu2<math>\Delta</math>Bstell</i>                                   |
| W9208-17D   | <i>MAT<math>\alpha</math> sae2::KanMX yku70::LEU2 leu2<math>\Delta</math>EcoR1::URA3::leu2<math>\Delta</math>Bstell</i>  |
| W9208-19A   | <i>MAT<math>\alpha</math> sgs1-D664<math>\Delta</math> sae2::KanMX</i>   |
| W9208-2A    | <i>MAT<math>\alpha</math> sgs1-D664<math>\Delta</math> sae2::kanMX yku70::LEU2</i>   |
| KBY126-14D  | <i>MAT<math>\alpha</math> dnl4::URA3</i>   |
| KBY126-8B   | <i>MAT<math>\alpha</math> dnl4::URA3 sgs1-D664<math>\Delta</math> MRE11-YFP RAD52-RFP</i>  |
| KBY126-2C   | <i>MAT<math>\alpha</math> dnl4::URA3 sae2::KanMX</i>   |
| KBY126-18A  | <i>MAT<math>\alpha</math> dnl4::URA3 sae2::kanMX sgs1-D664<math>\Delta</math> MRE11-YFP RAD52-RFP</i>  |
| KBY42-8D    | <i>MAT<math>\alpha</math> bar1::LEU2 MRE11-YFP RAD52-RFP</i>   |

|           |  |
|-----------|--|
| KBY48-4B  | <i>MAT<math>\alpha</math> sae2::kanMX MRE11-YFP RAD52-RFP</i>  |
| KBY48-11A | <i>MAT<math>\alpha</math> sgs1-D664<math>\Delta</math> MRE11-YFP RAD52-RFP</i>   |
| KBY48-4D  | <i>MAT<math>\alpha</math> sae2::kanMX sgs1-D664<math>\Delta</math> MRE11-YFP RAD52-RFP</i>   |
| KBY64-13D | <i>MAT<math>\alpha</math> sae2::kanMX MRE11-YFP ura3::3xURA3-TetOx112 I-SceI (ura3-1) TetR-mRFP (iGL119w) pWJ1089</i>                              |
| KBY64-14B | <i>MAT<math>\alpha</math> sgs1-D664<math>\Delta</math> MRE11-YFP ura3::3xURA3-TetOx112 I-SceI (ura3-1) TetR-mRFP (iGL119w) pWJ1089</i>             |
| KBY64-5A  | <i>MAT<math>\alpha</math> MRE11-YFP ura3::3xURA3-TetOx112 I-SceI (ura3-1) TetR-mRFP (iGL119w) pWJ1089</i>  |
| KBY69-13B | <i>MAT<math>\alpha</math> sgs1-D664<math>\Delta</math> sae2::kanMX MRE11-YFP ura3::3xURA3-TetOx112 I-SceI (ura3-1) TetR-mRFP (iGL119w) pWJ1089</i> |
| KBY89-2B  | <i>MAT<math>\alpha</math> rad51::LEU2 ade2-n::TRP1::ade2-I-SceI lys2::GAL-I-SceI</i>   |
| KBY89-14B | <i>MAT<math>\alpha</math> rad51::LEU2 sae2::KanMX ade2-n::TRP1::ade2-I-SceI lys2::GAL-I-SceI</i>   |
| KBY89-3D  | <i>MAT<math>\alpha</math> rad51::LEU2 sgs1-D664<math>\Delta</math> ade2-n::TRP1::ade2-I-SceI lys2::GAL-I-SceI</i>                                  |
| KBY89-9B  | <i>MAT<math>\alpha</math> rad51::LEU2 sae2::KanMX sgs1-D664<math>\Delta</math> ade2-n::TRP1::ade2-I-SceI lys2::GAL-I-SceI</i>                      |
| KBY80-22C | <i>MAT<math>\alpha</math> ku70::HIS3 MRE11-YFP RAD52-RFP</i>   |
| KBY80-8C  | <i>MAT<math>\alpha</math> ku70::HIS3 sae2::kanMX sgs1-D664<math>\Delta</math> MRE11-YFP RAD52-RFP</i>  |
| pSM502    | <i>pRS424-EXO1, 2-micron, T7 promoter, TRP1, AMP<sup>R</sup></i>   |
| pRS424    | <i>pRS424, 2 micron, T7 promoter, TRP1, AMP<sup>R</sup></i>  |
| pWJ1089   | <i>GAL-NLS-I-SceI, CEN, KAN<sup>R</sup>, HIS3</i>  |

---

All yeast strains are *RAD5* derivatives of the W303 background (Thomas and Rothstein, 1989) W1588 (Zhao et al., 1998) and only the relevant genotype is shown. The strains are listed in the order they appear in the text.

#### SUPPLEMENTAL REFERENCES

Thomas, B.J., and R. Rothstein. 1989. Elevated recombination rates in transcriptionally active DNA. *Cell*. 56:619-630.

Zhao, X., E.G. Muller, and R. Rothstein. 1998. A suppressor of two essential checkpoint genes identifies a novel protein that negatively affects dNTP pools. *Mol. Cell*. 2:329-340.