

Table S2. Synthetic Lethal Interactions Used to Prepare Figure 1B.

| | <i>DNA2</i> | <i>RAD27</i> | <i>SGS</i> | <i>SRS2</i> | <i>RRM3</i> | <i>POL32</i> |
|---|-------------|--------------|------------|-------------|-------------|--------------|
| <i>DNA2</i> | | SL | SL | SL | SL | SR |
| <i>SGS1</i> | SL | SL | | SL | SL | |
| <i>SRS2</i> | SL | SL | SL | | SL | SL |
| <i>RRM3</i> | SL | | SL | SL | | |
| NUCLEASES INVOLVED IN OKAZAKI FRAGMENT PROCESSING | | | | | | |
| <i>RAD27</i> | SL | | SL | SL | | SL |
| <i>EXO1</i> | SL | SL | | | | |
| <i>RNH35</i> | SL | SS | SS | | | |
| <i>RNH202</i> | SL | SS | SS | | | |
| <i>RNH203</i> | | | SS | | | |
| <i>YEN1</i> | SS | | | | | |
| TOPOISOMERASES | | | | | | |
| <i>TOP3</i> | SS | | | SL | SL | |
| <i>TOP1</i> | | | SL | | | |
| rDNA | | | | | | |
| <i>FOB1</i> | SR | | SR | | | |
| DNA REPLICATION | | | | | | |
| <i>POL32</i> | SR | SL | SL | SL | | |
| <i>POL3-01</i> | SL | SL | | | | |
| <i>POL1</i> | SS | | | | | |
| <i>RPA1</i> | SL | | | | | |
| <i>MGS1</i> | | | SL | | | |
| <i>CDC8</i> | | SL | SL | | | |
| <i>RNR1</i> | | SL | | | | |
| <i>CDC7</i> | | | SL | | | |
| <i>MCM10</i> | SL | | | | | |
| <i>CDC45</i> | | SL | | | SL | SL |
| <i>ELG1</i> | SL | SL | SL | SL | SL | SL |
| DNA REPAIR | | | | | | |
| <i>RAD50</i> | SL | SL | SL | SL | SL | SL |
| <i>XRS2</i> | SL | SL | SL | SL | SL | SL |
| <i>MRE11</i> | SL | SL | SL | SL | SL | SL |
| <i>RAD51</i> | | SL | | | | SL |
| <i>RAD52</i> | SS | SL | | SL | SL | SL |
| <i>RAD54</i> | | SL | | SL | | SL |
| <i>RAD55</i> | | SL | | | | SL |
| <i>SAE2</i> | SL | SL | SL | | SL | |
| <i>MMS2</i> | | | | SL | | |
| <i>RAD4</i> | | SL | | | | |
| <i>MMS1</i> | SL | | | SL | SL | |

| | | | | | | |
|--------------|----|--|----|----|----|--|
| <i>MMS22</i> | SL | | | SL | SL | |
| <i>WSS1</i> | | | SL | | | |

HYDROXYUREA ALTERED SENSITIVITY

| | | | | | | |
|-------------|--|--|--|----|----|--|
| <i>HUR1</i> | | | | | SL | |
| <i>SHU2</i> | | | | SL | | |
| <i>RMD7</i> | | | | | | |

CELL CYCLE

| | | | | | | |
|-------------|----|----|----|--|----|----|
| <i>SWE1</i> | | | SL | | | |
| <i>HPC2</i> | | SL | | | | |
| <i>CLA4</i> | SS | | | | | |
| <i>LTE1</i> | | | | | | SL |
| <i>PPH3</i> | | | | | SL | |

CELL CYCLE CHECKPOINTS

| | | | | | | |
|--------------|-----------|----|----|----|----|----|
| <i>MEC1</i> | | SL | | | | |
| <i>DUN1</i> | | | | | | SL |
| <i>RAD9</i> | SR | SL | | | SL | SL |
| <i>RAD17</i> | | SL | | | | SL |
| <i>DDC1</i> | | SL | | SL | | SL |
| <i>RAD24</i> | | SL | | | | SL |
| <i>TOF1</i> | SL | SL | | | | SL |
| <i>MRC1</i> | SL | SL | SL | SL | SL | SL |
| <i>CSM3</i> | SL | SL | SL | SL | | SL |

TELOMERES

| | | | | | | |
|-------------|-----------|--|--|--|-----------|--|
| <i>PIF1</i> | SR | | | | SR | |
| <i>TEL1</i> | SS(37) | | | | | |
| <i>EST1</i> | SS | | | | | |
| <i>EST2</i> | SS | | | | | |

CHROMOSOME COHESION

| | | | | | | |
|--------------|----|----|----|----|----|----|
| <i>CTF4</i> | SL | SL | SL | SL | SL | SL |
| <i>CHL12</i> | SL | SL | SL | SL | | SL |
| <i>CHL1</i> | | SL | | SL | | |
| <i>CTF8</i> | | | | | SL | |
| <i>DCC1</i> | | SL | SL | SL | SL | SL |

SLX GENES

| | | | | | | |
|--------------|----|----|----|--|--|--|
| <i>MUS4</i> | | SL | SL | | | |
| <i>MMS81</i> | | SL | SL | | | |
| <i>SLX4</i> | | | SL | | | |
| <i>SLX5</i> | SL | | SL | | | |
| <i>SLX8</i> | SL | | SL | | | |
| <i>SL9</i> | | | SL | | | |
| <i>SLX1</i> | | | SL | | | |

CHROMATIN REMODELING AND SILENCING PROTEINS

| | | | | | | |
|-------------|----|--|--|--|--|--|
| <i>RAD6</i> | SS | | | | | |
| <i>BRE1</i> | SS | | | | | |
| <i>SWD1</i> | SS | | | | | |

| | | | | | | |
|---------------|----|----|----|----|----|----|
| <i>SWD3</i> | SS | | SL | | | |
| <i>SAP30</i> | SS | | | | | |
| <i>LGE1</i> | SS | | | | | |
| <i>RTF1</i> | SS | | | | | |
| <i>ASF1</i> | SS | | SL | | | |
| <i>HST1</i> | | SL | | | | |
| <i>HST3</i> | SL | SL | SL | | | SL |
| <i>RPD3</i> | SL | | | | | |
| <i>PHO23</i> | SL | | | | | |
| <i>ESC2</i> | | SL | SL | SL | SL | SL |
| <i>ESC4</i> | | | SL | SL | SL | |
| <i>RTT103</i> | SS | | | | | |
| <i>NCE4</i> | | | | SL | SL | SL |
| <i>CAC2</i> | | SL | | | | |
| <i>CAC3</i> | | | | | | SL |
| <i>RTT101</i> | | | | | SL | |

UBIQUITIN AND SUMO METABOLISM AND PROTEIN DEGRADATION

| | | | | | | |
|-------------|----|--|--|----|--|--|
| <i>UBC4</i> | SS | | | | | |
| <i>SMT3</i> | | | | SL | | |
| <i>RAD6</i> | SL | | | | | |

STRESS

| | | | | | | |
|--------------|----|----|----|--|----|----|
| <i>HOG1</i> | SL | | | | | |
| <i>SOD1</i> | SL | SL | SL | | | |
| <i>SOD2</i> | | | | | SL | |
| <i>LYS7</i> | SL | SL | | | | |
| <i>HAL3</i> | | | SL | | | |
| <i>HSP40</i> | | | | | | SL |
| <i>SIS2</i> | | SL | SL | | | |

MITOCHONDRIA

| | | | | | | |
|----------------|--|----|--|----|--|--|
| <i>GDS1</i> | | | | SL | | |
| <i>YPR116W</i> | | SL | | | | |

RNA INTERACTING PROTEINS

| | | | | | | |
|--------------|----|--|----|----|--|--|
| <i>CAF20</i> | SL | | | | | |
| <i>MSL1</i> | | | | SL | | |
| <i>MPH1</i> | | | | SL | | |
| Pub1 | | | SL | | | |

PROTEIN SYNTHESIS

| | | | | | | |
|---------------|--|----|----|--|--|--|
| <i>RPL27A</i> | | SL | | | | |
| <i>RPS30B</i> | | SL | | | | |
| <i>RPL24A</i> | | | SL | | | |

MISMATCH REPAIR

| | | | | | | |
|-------------|--|--|----|--|----|--|
| <i>MSH6</i> | | | SL | | | |
| <i>PRM1</i> | | | | | SL | |

CELL POLARITY AND MORPHOLOGY

| | | | | | | |
|------------------|--|----|--|--|--|----|
| <i>MNN10</i> | | | | | | SL |
| <i>HOC1</i> | | | | | | SL |
| MEIOSIS | | | | | | |
| <i>EAF1</i> | | | | | | SL |
| VACUOLAR SORTING | | | | | | |
| <i>VMA6</i> | | SL | | | | |
| | | | | | | |

SL-Synthetically lethal

SS-Synthetic sick

SR-Synthetic rescue, enhanced growth of double mutant

Data in this table are compiled from this study, and from references (Tong et al., 2001; Ooi et al., 2003; Tong et al., 2004; Torres et al., 2004, Nicolas, in press).