

**Table S2 Crosses performed for the unpaired DNA masking experiments.**

| Cross # | Strain names        | $r^{ef}$ locations | Round spores (%) | STDEV |
|---------|---------------------|--------------------|------------------|-------|
| 1       | F2-26 × P10-15      | wt × wt            | 0.00             | 0.00  |
| 2       | F2-26 × ISU 3118    | wt × r1            | 0.99             | 0.00  |
| 3       | F2-26 × ISU 3117    | wt × r2            | 0.96             | 0.03  |
| 4       | ISU 3116 × P10-15   | r2 × wt            | 0.98             | 0.01  |
| 5       | ISU 3116 × ISU 3117 | r2 × r2            | 0.00             | 0.00  |
| 6       | ISU 3116 × ISU 3118 | r2 × r1            | 0.05             | 0.01  |
| 7       | F2-26 × P10-15      | wt × wt            | 0.01             | 0.00  |
| 8       | ISU 3116 × P10-15   | r2 × wt            | 0.92             | 0.06  |
| 9       | F2-26 × ISU 3117    | wt × r2            | 0.94             | 0.05  |
| 10      | F2-26 × ISU 3119    | wt × r3            | 0.87             | 0.15  |
| 11      | ISU 3116 × ISU 3117 | r2 × r2            | 0.00             | 0.00  |
| 12      | ISU 3116 × ISU 3119 | r2 × r3            | 0.34             | 0.06  |
| 13      | ISU 3116 × P10-15   | r2 × wt            | 1.00             | 0.00  |
| 14      | ISU 3127 × P10-15   | r5 × wt            | 0.99             | 0.01  |
| 15      | F2-26 × ISU 3124    | wt × r5            | 0.97             | 0.01  |
| 16      | F2-26 × ISU 3117    | wt × r2            | 0.90             | 0.05  |
| 17      | F2-26 × ISU 3119    | wt × r3            | 0.89             | 0.05  |
| 18      | ISU 3116 × ISU 3124 | r2 × r5            | 0.68             | 0.02  |
| 19      | ISU 3127 × ISU 3117 | r5 × r2            | 0.54             | 0.04  |
| 20      | ISU 3127 × ISU 3119 | r5 × r3            | 0.42             | 0.06  |
| 21      | ISU 3116 × ISU 3119 | r2 × r3            | 0.19             | 0.03  |
| 22      | ISU 3127 × ISU 3124 | r5 × r5            | 0.00             | 0.00  |
| 23      | F2-26 × P10-15      | wt × wt            | 0.00             | 0.00  |
| 24      | ISU 3116 × ISU 3117 | r2 × r2            | 0.00             | 0.00  |
| 25      | ISU 3115 × P10-15   | r4 × wt            | 1.00             | 0.00  |
| 26      | ISU 3116 × P10-15   | r2 × wt            | 0.97             | 0.02  |
| 27      | F2-26 × ISU 3118    | wt × r1            | 0.98             | 0.02  |
| 28      | F2-26 × ISU 3124    | wt × r5            | 0.97             | 0.04  |
| 29      | F2-26 × ISU 3114    | wt × r4            | 0.95             | 0.01  |
| 30      | F2-26 × ISU 3117    | wt × r2            | 0.80*            | 0.15  |
| 31      | ISU 3116 × ISU 3124 | r2 × r5            | 0.67             | 0.04  |
| 32      | ISU 3115 × ISU 3118 | r4 × r1            | 0.34             | 0.07  |
| 33      | ISU 3116 × ISU 3114 | r2 × r4            | 0.29             | 0.06  |
| 34      | ISU 3115 × ISU 3117 | r4 × r2            | 0.21             | 0.06  |
| 35      | ISU3115 × ISU 3124  | r4 × r5            | 0.21             | 0.08  |
| 36      | ISU 3116 × ISU 3118 | r2 × r1            | 0.05             | 0.02  |
| 37      | ISU 3116 × ISU 3117 | r2 × r2            | 0.00             | 0.01  |
| 38      | ISU 3115 × ISU 3114 | r4 × r4            | 0.00             | 0.00  |
| 39      | F2-26 × P10-15      | wt × wt            | 0.00             | 0.00  |
| 40      | F2-26 × P10-15      | wt × wt            | 0.00             | 0.00  |

|    |                     |         |      |      |
|----|---------------------|---------|------|------|
| 41 | F2-26 × ISU 3118    | wt × r1 | 0.98 | 0.01 |
| 42 | F2-26 × ISU 3117    | wt × r2 | 0.95 | 0.03 |
| 43 | F2-26 × ISU 3119    | wt × r3 | 0.97 | 0.01 |
| 44 | F2-26 × ISU 3114    | wt × r4 | 0.99 | 0.01 |
| 45 | F2-26 × ISU 3124    | wt × r5 | 0.99 | 0.01 |
| 46 | F2-26 × ISU 3141    | wt × r6 | 0.98 | 0.01 |
| 47 | ISU 3143 × P10-15   | r1 × wt | 0.98 | 0.01 |
| 48 | ISU 3143 × ISU 3118 | r1 × r1 | 0.00 | 0.00 |
| 49 | ISU 3143 × ISU 3117 | r1 × r2 | 0.05 | 0.00 |
| 50 | ISU 3143 × ISU 3119 | r1 × r3 | 0.43 | 0.05 |
| 51 | ISU 3143 × ISU 3114 | r1 × r4 | 0.49 | 0.06 |
| 52 | ISU 3143 × ISU 3124 | r1 × r5 | 0.84 | 0.07 |
| 53 | ISU 3143 × ISU 3141 | r1 × r6 | 0.99 | 0.00 |

This table is a complete list of crosses performed during the unpaired DNA masking experiments. The average percentage of round spores produced by each cross (in triplicate) and its standard deviation value are indicated. \*An outlier believed to be the result of an experimental artifact.