

**Table S2 Viable F2 recombinant progeny data generated by recombination analysis using pairs of dominant markers.**

| Recombination mapping F2 progeny |         |            |            |            |              |             |            |             |            |            |             |             |            |              |      |         |          |  |
|----------------------------------|---------|------------|------------|------------|--------------|-------------|------------|-------------|------------|------------|-------------|-------------|------------|--------------|------|---------|----------|--|
| mutation                         | alleles | <i>R,D</i> |            |            | <i>Gl,Sb</i> |             |            | <i>Sb,H</i> |            |            | <i>H,Pr</i> |             |            | total scored | cM   | cM away | Dfs away |  |
|                                  |         | <i>R,+</i> | <i>+,D</i> | <i>+,+</i> | <i>Gl,+</i>  | <i>+,Sb</i> | <i>+,+</i> | <i>Sb,+</i> | <i>+,H</i> | <i>+,+</i> | <i>H,+</i>  | <i>+,Pr</i> | <i>+,+</i> |              |      |         |          |  |
| <i>psg8</i>                      | 2       | 3          | 1          | 4          | 9            | 4           | 27         |             |            |            | 11          | 0           | 15         | 74           | 0    | 0       | 2        |  |
| <i>psg28</i>                     | 1       | 25         | 3          | 7          | 4            | 1           | 31         | 21          | 12         | 83         | 13          | 4           | 51         | 255          | 0    | 0       | 2        |  |
| <i>psg2<sup>a</sup></i>          | 2       | 28         | 42         | 1          |              |             |            |             |            |            |             |             |            | 71           | 15   | 10      | 5        |  |
| <i>psg5<sup>a</sup></i>          | 2       | 20         | 91         | 1          |              |             |            |             |            |            |             |             |            | 112          | 25   | 9       | 9        |  |
| <i>psg15</i>                     | 1       | 9          | 19         | 0          | 7            | 2           | 19         |             |            |            | 15          | 0           | 15         | 86           | 25.2 | 2.9     | 6        |  |
| <i>psg23</i>                     | 1       | 7          | 9          | 0          | 7            | 0           | 17         | 2           | 0          | 17         | 10          | 3           | 25         | 97           | 28   | 4.5     | 4        |  |
| <i>psg16</i>                     | 1       | 0          | 26         | 0          | 3            | 1           | 0          |             |            |            | 2           | 0           | 4          | 36           | 35   | 5.7     | 6        |  |
| <i>psg19</i>                     | 1       | 0          | 11         | 2          | 10           | 7           | 2          | 13          | 4          | 59         | 27          | 0           | 26         | 161          | 43.6 | 4.7     | 39       |  |
| <i>psg3</i>                      | 2       | 0          | 124        | 9          | 14           | 3           | 0          |             |            |            |             |             |            | 150          | 43.6 | 0.8     | 1        |  |
| <i>psg27</i>                     | 1       | 0          | 5          | 1          | 6            | 1           | 0          | 14          | 1          | 6          | 14          | 3           | 13         | 64           | 43.6 | 0.2     | 1        |  |
| <i>psg21</i>                     | 1       |            |            |            | 12           | 2           | 1          | 22          | 0          | 13         | 10          | 1           | 18         | 79           | 45   | 1.2     | 5        |  |
| <i>psg22</i>                     | 1       | 0          | 25         | 5          | 1            | 2           | 4          | 3           | 1          | 4          | 11          | 3           | 26         | 85           | 45   | 7.6     | 50       |  |
| <i>psg10</i>                     | 1       | 10         | 75         | 14         | 5            | 21          | 11         | 20          | 0          | 9          | 33          | 9           | 59         | 266          | 46   | 9       | 53       |  |
| <i>psg14</i>                     | 1       | 1          | 46         | 5          | 12           | 4           | 0          | 9           | 0          | 5          | 19          | 3           | 17         | 121          | 46   | 0.4     | 4        |  |
| <i>psg26</i>                     | 1       | 2          | 40         | 4          | 11           | 13          | 0          |             |            |            | 23          | 0           | 68         | 161          | 47.1 | 3.4     | 29       |  |
| <i>psg4</i>                      | 3       |            |            |            | 22           | 17          | 0          |             |            |            |             |             |            | 39           | 47.4 | 1.3     | 10       |  |
| <i>psg9</i>                      | 1       | 0          | 8          | 2          | 7            | 1           | 0          | 2           | 0          | 7          | 10          | 1           | 18         | 56           | 48   | 3.8     | 37       |  |
| <i>psg20</i>                     | 1       | 1          | 49         | 14         | 4            | 1           | 2          | 3           | 0          | 6          | 15          | 7           | 47         | 149          | 49   | 4.2     | 39       |  |
| <i>psg6</i>                      | 2       |            |            |            | 15           | 17          | 3          |             |            |            |             |             |            | 35           | 51.8 | 1.5     | 2        |  |
| <i>psg7<sup>a</sup></i>          | 3       |            |            |            |              |             |            | 9           | 23         | 1          |             |             |            | 33           | 62   | 4       | 5        |  |
| <i>psg25</i>                     | 1       | 5          | 19         | 17         | 1            | 16          | 16         | 0           | 5          | 1          | 19          | 5           | 28         | 132          | 66.2 | 3.3     | 2        |  |
| <i>psg29</i>                     | 1       | 0          | 20         | 3          | 1            | 16          | 34         | 2           | 0          | 5          | 17          | 0           | 3          | 101          | 70   | 6.2     | 9        |  |
| <i>psg11</i>                     | 1       |            |            |            | 0            | 18          | 23         | 0           | 15         | 4          | 24          | 1           | 0          | 85           | 73   | 2.7     | 2        |  |
| <i>psg24</i>                     | 1       | 0          | 14         | 7          | 0            | 18          | 7          | 2           | 8          | 30         | 13          | 14          | 0          | 113          | 79   | 1.1     | 1        |  |
| <i>psg13</i>                     | 1       | 5          | 8          | 12         | 2            | 1           | 13         | 0           | 8          | 7          | 4           | 4           | 0          | 64           | 82   | 2.3     | 5        |  |
| <i>psg18</i>                     | 1       |            |            |            | 8            | 13          | 27         | 1           | 4          | 42         | 4           | 22          | 0          | 121          | 88   | 1.2     | 4        |  |
| <i>psg17</i>                     | 1       |            |            |            | 3            | 11          | 37         | 1           | 8          | 33         | 1           | 3           | 1          | 98           | 100  | 3.2     | 0        |  |
| <i>psg12</i>                     | 1       |            |            |            | 3            | 1           | 16         | 2           | 8          | 37         | 1           | 28          | 19         | 115          | 102  | 1.9     | 7        |  |

This table displays the raw scoring data from crosses with four pairs of dominant markers. Each row represents the mapped PSG complementation groups. The third column from the right, represents the observed genetic map positions calculated using the formula in Figure 2B. The last two columns reflect the reliability of the mapping process and were calculated as described for *psg24* in Figure 2C. The raw data for *psg24* is also shown in Figure 2A. Mutants were sorted by cytological location.

<sup>a</sup> recombination results reported Wang *et al.* 2008