

Table S10 Transpose of the recursion matrix for calculating probabilities of two-locus autosomal diplotypes of the form $AA|AA$, in the generation of four-way RIL by sibling mating. Only the non-zero entries are shown

| State at $k + 1$ | | State at k | | | | | | | | | | | |
|------------------|--|--------------------------------|------------------------|-------------------|--------------------|------------------------|--------------------|---------------|--|--|--|--|--|
| 1 | | 2: $(1 - r)^2$ | 3: $2r(1 - r)$ | 4: r^2 | | | | | | | | | |
| 2 | | 1: $\frac{[r^2 + (1-r)^2]}{4}$ | 2: $\frac{(1-r)^2}{2}$ | 3: $r(1 - r)$ | 4: $\frac{r^2}{2}$ | 5: $\frac{(1-r)^2}{4}$ | 6: $\frac{r^2}{4}$ | 7: $r(1 - r)$ | | | | | |
| 3 | | 8: $\frac{1-r}{2}$ | 9: $\frac{r}{2}$ | 10: $\frac{1}{2}$ | | | | | | | | | |
| 4 | | 2: $\frac{1}{8}$ | 3: $\frac{1}{4}$ | 4: $\frac{1}{8}$ | 11: $\frac{1}{8}$ | 12: $\frac{1}{4}$ | 13: $\frac{1}{8}$ | | | | | | |
| 5 | | 5: $1 - r$ | 6: r | | | | | | | | | | |
| 6 | | 11: 1 | | | | | | | | | | | |
| 7 | | 8: $1 - r$ | 9: r | | | | | | | | | | |
| 8 | | 5: $\frac{1-r}{4}$ | 6: $\frac{r}{4}$ | 7: $\frac{1}{4}$ | 8: $\frac{1-r}{2}$ | 9: $\frac{r}{2}$ | | | | | | | |
| 9 | | 8: $\frac{1}{4}$ | 9: $\frac{1}{4}$ | 11: $\frac{1}{4}$ | 12: $\frac{1}{4}$ | | | | | | | | |
| 10 | | 2: $\frac{1-r}{4}$ | 3: $\frac{1}{4}$ | 4: $\frac{r}{4}$ | 8: $\frac{1-r}{4}$ | 9: $\frac{r}{4}$ | 10: $\frac{1}{4}$ | | | | | | |
| 11 | | 5: $\frac{1}{4}$ | 6: $\frac{1}{4}$ | 11: $\frac{1}{2}$ | | | | | | | | | |
| 12 | | 8: $\frac{1}{2}$ | 9: $\frac{1}{2}$ | | | | | | | | | | |
| 13 | | 2: $\frac{1}{4}$ | 3: $\frac{1}{2}$ | 4: $\frac{1}{4}$ | | | | | | | | | |