



















Table S18 Transpose of the recursion matrix for calculating probabilities of the two-locus X chromosome female diplotype of the form $AA|AB$, in the generation of four-way RIL by sibling mating

State at $k + 1$	State at k				
1: 	2: $(1 - r)$	3: r	4: $(1 - r)$	5: r	
2: 	1: $\frac{r^2 + (1-r)^2}{8}$	4: $\frac{1-r}{2}$	5: $\frac{r}{2}$	6: $\frac{r(1-r)}{4}$	7: $\frac{r(1-r)}{4}$
3: 	8: $\frac{1}{4}$	9: $\frac{1-r}{4}$	10: $\frac{r}{4}$	14: $\frac{r}{4}$	15: $\frac{1-r}{4}$
4: 	1: $\frac{r^2 + (1-r)^2}{8}$	2: $\frac{1-r}{2}$	3: $\frac{r}{2}$	6: $\frac{r(1-r)}{4}$	7: $\frac{r(1-r)}{4}$
5: 	11: $\frac{1}{4}$	12: $\frac{1-r}{4}$	13: $\frac{r}{4}$	14: $\frac{1-r}{4}$	15: $\frac{r}{4}$
6: 	12: $\frac{1-r}{2}$	13: $\frac{r}{2}$	16: $\frac{1}{2}$		
7: 	9: $\frac{1-r}{2}$	10: $\frac{r}{2}$	17: $\frac{1}{2}$		
8: 	2: $\frac{1}{4}$	3: $\frac{1}{4}$	14: $\frac{r}{4}$	15: $\frac{1-r}{4}$	
9: 	6: $\frac{r}{4}$	7: $\frac{1-r}{4}$	17: $\frac{1}{2}$		
10: 	12: $\frac{1}{4}$	13: $\frac{1}{4}$	18: $\frac{1}{8}$		
11: 	4: $\frac{1}{4}$	5: $\frac{1}{4}$	14: $\frac{1-r}{4}$	15: $\frac{r}{4}$	
12: 	6: $\frac{1-r}{4}$	7: $\frac{r}{4}$	16: $\frac{1}{2}$		
13: 	9: $\frac{1}{4}$	10: $\frac{1}{4}$	18: $\frac{1}{8}$		
14: 	4: $\frac{1}{4}$	5: $\frac{1}{4}$	11: $\frac{1}{4}$	12: $\frac{1-r}{4}$	13: $\frac{r}{4}$
15: 	2: $\frac{1}{4}$	3: $\frac{1}{4}$	8: $\frac{1}{4}$	9: $\frac{1-r}{4}$	10: $\frac{r}{4}$
16: 	6: $\frac{1-r}{4}$	7: $\frac{r}{4}$	12: $\frac{1-r}{2}$	13: $\frac{r}{2}$	
17: 	6: $\frac{r}{4}$	7: $\frac{1-r}{4}$	9: $\frac{1-r}{2}$	10: $\frac{r}{2}$	
18: 	9: $\frac{1}{2}$	10: $\frac{1}{2}$	12: $\frac{1}{2}$	13: $\frac{1}{2}$	