

**Table S1 Female and male gametes and their frequencies, and frequencies of their F<sub>1</sub> progenies.** Assuming four alleles can be clearly identified at each of the two linked loci. Genotypes of the female and male parents are  $A_1A_2/B_1B_2$  and  $C_1D_2/C_1D_2$ , respectively. Recombination frequencies in the female and male parents are denoted as  $r_F$  and  $r_M$ , respectively.

Gamete and its frequency from the female F <sub>1</sub>	Gamete and its frequency from the male F <sub>1</sub>			
	$C_1C_2, \frac{1}{2}(1-r_M)$	$C_1D_2, \frac{1}{2}r_M$	$D_1C_2, \frac{1}{2}r_M$	$D_1D_2, \frac{1}{2}(1-r_M)$
$A_1A_2, \frac{1}{2}(1-r_F)$	$\frac{1}{4}(1-r_F)(1-r_M)$	$\frac{1}{4}(1-r_F)r_M$	$\frac{1}{4}(1-r_F)r_M$	$\frac{1}{4}(1-r_F)(1-r_M)$
$A_1B_2, \frac{1}{2}r_F$	$\frac{1}{4}r_F(1-r_M)$	$\frac{1}{4}r_Fr_M$	$\frac{1}{4}r_Fr_M$	$\frac{1}{4}r_F(1-r_M)$
$B_1A_2, \frac{1}{2}r_F$	$\frac{1}{4}r_F(1-r_M)$	$\frac{1}{4}r_Fr_M$	$\frac{1}{4}r_Fr_M$	$\frac{1}{4}r_F(1-r_M)$
$B_1B_2, \frac{1}{2}(1-r_F)$	$\frac{1}{4}(1-r_F)(1-r_M)$	$\frac{1}{4}(1-r_F)r_M$	$\frac{1}{4}(1-r_F)r_M$	$\frac{1}{4}(1-r_F)(1-r_M)$