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## **Counting Crossing Over Worksheet**

## Data Table

Genotype	Tally Marks	Total
Non-crossover Asci		
4b:4t		
4t:4b		
Crossover Asci		
2b:2t:2b:2t		
2t:2b:2t:2b		
2b:4t:2b		
2t:4b:2t		

## Post-Lab Questions and Calculations

- 1. Take the sum of the tally marks for each genotype. Record each result in the Total column.
- 2. Determine the total number of noncrossover asci counted.
- 3. Determine the total number of crossover asci counted.
- 4. Determine the total number of hybrid asci counted.
- 5. Determine the map distance between the gene for spore color and the centromere using Equation 1. Report the result in map units. However, keep in mind that each ascus contains 8 spores because the four haploid spores underwent an additional mitotic event after meiosis. To account for this, the map distance found in Equation 1 needs to be halved (Equation 2).

Map distance = 
$$\frac{\text{corrected number of crossover asci}}{\text{corrected total number of asci counted}} \times 100$$
 Equation 1  
 $\frac{\text{Map distance}}{2}$  Equation 2

- 6. Was the number of each type of crossover phenotype observed relatively constant or equal? Explain why you would expect these numbers to be constant.
- 7. A similar technique can be used to determine the distance between two genes on a single chromosome. In this laboratory a color mutation was used as the gene of interest. What is the benefit for using a color mutant gene for learning about map units.

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