

### Gene Mapping Worksheet

1. In 1911, Thomas Hunt Morgan collected the following crossover gene frequencies while studying *Drosophila*. Bar-shaped eyes are indicated by the B allele, and carnation eyes are indicated by the allele C. Fused veins on wings (A) and scalloped wings (S) are located on the same chromosomes.

Gene Combinations	Recombination Frequency
A/B	2.5%
A/C	3.0%
B/C	5.5%
B/S	5.5%
A/S	8.0%
C/S	11.0%

2. The following chart shows the crossover frequencies for some genes on an autosome of organism Z. Construct a chromosome map.

Genes	Crossover Frequency
P & Q	5%
P & R	8%
P & S	12%
Q & R	13%
Q & S	17%

3. For a series of experiments, a linkage group composed of genes W, X, Y and Z was found to show the following gene combinations. (All recombinations are expressed per 100 fertilized eggs). Construct a gene map.

Genes	W	X	Y	Z
W	—	5	7	8
X	5	—	2	3
Y	7	2	—	1
Z	8	3	1	—

4. For a series of breeding experiments, a linkage group composed of genes A, B, C, and D was found to show the following gene combinations. (All recombinations are expressed per 100 fertilized eggs). Construct a chromosome map.

Genes	A	B	C	D
A	—	12	15	4
B	12	—	3	8
C	15	3	—	11
D	4	8	11	—