

## SI Session 15

### I. Morgan's Fruit Fly Experiment

a. In the parent generation Morgan crossed a wild-type red eyed female and a white eyed male. What are the phenotypes of the parents?

b. Show the cross of the parental generation

c. Show the cross of two F<sub>1</sub> generation flies

d. Using Morgan's results to explain, how is eye-color in fruit flies sex-linked?

### II. X-inactivation

a. In which of the following structures would you expect to find a Barr body?

- a. An egg
- b. A sperm
- c. A liver cell of a woman
- d. A liver cell of a man
- e. A mitochondria

b. What is a Barr body? Why does this phenomenon occur?

### III. Linked Genes & Recombination

a. What are linked genes?

b. What process leads to genetic recombination? What phase of the cell cycle does this process occur in?

c. Draw a linkage map for the following recombination frequencies:

j,k: 12%, j,m: 9% k,l: 6% l,m: 15%

d. Use the following recombination frequencies to determine the order of genes on a chromosome:

a,c: 10% a,d 30% b,c 24% b,d 16%

### IV. Chromosome Alterations

a. What is non-disjunction? What happens if non-disjunction occurs in Meiosis I? Meiosis II?

b. Which type of non-disjunction will have a higher probability of producing normal gametes?

d. Complete the following table:

| Type of Alteration | Effect |
|--------------------|--------|
| Deletion           |        |

|               |  |
|---------------|--|
| Duplication   |  |
| Inversion     |  |
| Translocation |  |