

Fruit Fly Genetics Questions

Part I. Monohybrid Cross

1. Why is it crucial to use virgin female flies in genetic crosses?
2. What is the resulting phenotypic ratio for the F1 generation flies?
3. What is the resulting phenotypic ratio for the F2 generation flies?
4. If forty F2 flies from this simulation were actually crossed, theoretically how many of the flies would be wild type? How many would theoretically be sepia?

Part II. Backcross

1. What is the resulting phenotypic ratio for the F1 generation flies?
2. What is the resulting phenotypic ratio for the F2 generation flies?
3. How does the Backcross differ from the Monohybrid cross performed in Part I?
4. (Optional) What is the benefit of performing a backcross?

Part III. Dihybrid Cross

1. What is the resulting phenotypic ratio for the F1 generation flies?
2. What is the resulting phenotypic ratio for the F2 generation flies?

3. If eighty F2 flies from this simulation were actually crossed, theoretically how many of the flies would be:
- a. non-ebony and non-dumpy
 - b. ebony and non-dumpy
 - c. non-ebony and dumpy
 - d. ebony and dumpy

Part IV. Sex-Linked Cross I

1. What is the resulting phenotypic ratio for the F1 generation flies?
2. What is the resulting phenotypic ratio for the F2 generation flies?
3. How does a sex-linked cross differ from the crosses in Parts I, II, and III?

Part V. Sex-Linked Cross II

1. What is the resulting phenotypic ratio for the F1 generation flies?
2. What is the resulting phenotypic ratio for the F2 generation flies?
3. Describe the differences between the Sex-Linked I and Sex-Linked II crosses.