

Review Questions

Dr. Scheiber: Mutations, Chimeras and Variegation

1. What is the cause of mutations?

Mutations are caused by errors occurring during replication of DNA in mitosis.

2. What are the different kinds of mutations in the structure of chromosomes?

Point mutation, duplication, deletion, inversion, translocation.

3. What is a tunica corpus arrangement?

It is the shoot apical meristem of an angiosperm.

4. What is semigamy and what is the result?

It is the failure of male and female gametes to fuse during fertilization. The result is that the embryo has distinct areas of male and female origin that are identical to the parent.

5. What is the most common type of chimera and how does it look?

Periclinal chimeras are the most common, with green and white coloration.

6. What must occur for a leaf to be all white? Is it likely that a branch with all white leaves will survive?

The L1, L2, and L3 layers must all be white (lacking chlorophyll). Without chlorophyll, the leaves cannot sustain themselves and without another source of energy (such as other green leaves on the branch), the leaves will not survive.

7. Why does a leaf with a white L1 layer and green L2 and L3 appear the same as a leaf with all green layers?

The L1 layer makes up the epidermis, which is only one cell thick. Chlorophyll is only in the guard cells of this layer, so it barely affects the appearance of the leaf.

8. How can chimeras be maintained?

Chimeras can be maintained by asexual propagation methods such as from leaf and stem cutting propagation.

9. What kind of chimera would produce an apple that has both sweet and sour flesh?

A sectoral chimera.