

Theme Four

Continuity and Change

1. (A)

In this cross, all of the daughters will get one X chromosome from Mark. Mark does not have the color-blind allele on his X chromosome. So, no matter what allele each daughter gets from Cindy, the dominant allele from Mark will be expressed and no daughters will display the color-blind trait.

2. (C)

When traits are linked, the genes for the traits are located on the same chromosome. So, the two traits will not assort independently. More offspring will reflect the parental phenotypes. Recombinant phenotypes arise due to crossing-over, but the frequencies of these phenotypes are greatly reduced.

3. (A)

In Griffith's experiment, some material in the dead S or virulent bacteria transformed the living R or harmless bacteria into the virulent form. Nothing was done to demonstrate which molecule was responsible for the transformation.

4. (B)

Chargaff found that each organism that he examined the percentage of adenine and thymine nucleotides were the same and that the percentage of guanine and cytosine nucleotides were the same.

5. (A)

Helicase separates the two strands of the DNA double helix so that each one can serve as a template for new strand.

6. (D)

RNA polymerase adds nucleotides to a growing RNA strand during transcription, and it is not involved in DNA replication.