

Bacterial and Viral Genetics

1. Which of the following is considered evidence for recombination in viruses?
 - a. Transduction
 - b. Formation of a protein coat around the viral DNA
 - c. Recovery of both parental and recombinant type viruses when bacteria are infected with viruses carrying different alleles at the same loci
 - d. Recovery of both parental type viruses when bacteria are infected with two types of viruses

2. A bacterial cell is infected with two viruses. One has the genotype *A B C D* and the other genotype *a b c d*. *A* and *a*, *B* and *b*, *C* and *c*, *D* and *d* are alleles. Which two different genotypes are produced by the same crossover events?
 - a. *ABCd, abcd*
 - b. *abcD, ABCD*
 - c. *aBCd, abcD*
 - d. *AbCd, aBcd*
 - e. *AbcD, aBCd*

3. Name the principal requirement for bacterial chromosomal transfer to occur in conjugation.
 - a. A virus must be present
 - b. One of the bacterial cells must lyse
 - c. The F-factor must be integrated into the chromosome
 - d. The F-factor must not be integrated into the chromosome

4. Describe transformation.
 - a. An exchange of cytoplasm between two bacterial cells
 - b. Requires contact between two bacterial cells
 - c. Uptake of DNA from the media by a bacterial cell
 - d. Results from viral infection

5. Define F-factor.
 - a. A virus
 - b. A high frequency of recombination cell
 - c. Is not necessary for conjugation
 - d. Is an episome with chromosomal transfer genes

6. Two viruses infect a bacterium. One virus has genotype *A B C D*, the other *a b c d*. The following are allelic: *A* to *a*, *B* to *b*, *C* to *c*, *D* to *d*. Crossing over occurs and viruses are released from the cell.

Key: a. abCd
b. aBcD
c. aBCD
d. ABCD

Use key. What genotype results from a single crossover?

7. Two viruses infect a bacterium. One virus has genotype aBCD. The other AbcD. The following are allelic: a to a, B to b, C to c, D to d. Crossing over may or may not occur and viruses are released from the cell.

Key: a. A and B
b. B and C
c. C and D
d. A and B, B and C
e. A and b, C and D
f. B and C, C and D
g. A and B, B and C, and D
h. No crossover occurred

Use key. A virus with genotype aBCD is obtained. If a recombinant, between which genes did the crossover(s) occur?