

The Genetics of Viruses and Bacteria

Chapter 18

1. What forms can a viral genome take?
2. Distinguish between a capsid and an envelope.
3. How is the host range a virus determined?
4. Describe the lytic and lysogenic cycles.
5. Scientists have discovered how to put together a bacteriophage with the protein coat of phage T2 and the DNA of T4. If this composite phage were allowed to infect an E. coli, then phages produced by this cell would have what type of DNA and what type of protein?
6. Describe the life cycle of a retrovirus.
7. How might viruses have originated?
8. Distinguish between viroids and prions.
9. Describe transformation.
10. A microbiologist found that some bacteria infected by a particular phage had developed the ability to produce a particular enzyme which they could not make before they were infected. How did this occur? What is the term used for this phenomenon?
11. What is conjugation and of what value is it to bacteria?
12. What are transposons?
13. Describe the operon model of bacterial gene control. Make sure to define the terms promoter, operator and repressor.
14. Explain how the tryptophan operon allows a bacterial cell to regulate the synthesis of tryptophan.
15. Using the trp and lac operons as examples, explain why bacteria might sometimes need a repressible operon and at other times need an inducible operon.
16. Describe the basic concept of the operon, including the role of each of the following: promoter, regulator, operator, structural gene, repressor protein
17. Explain the difference between an inducible and a repressible operon.
18. How is CAP an example of positive gene control?