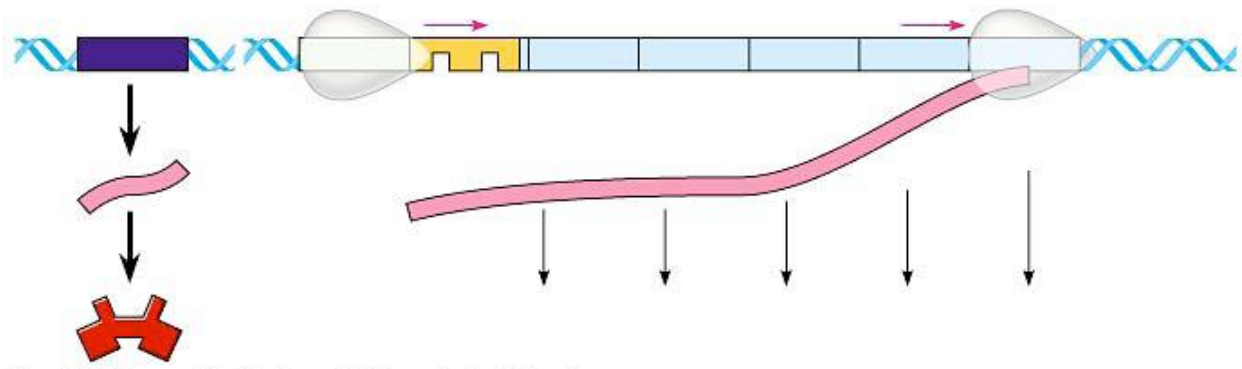


CHAPTER 16: Regulation of Gene Expression

1. Most bacteria are not pathogenic. Identify several important roles they play in the ecosystem and human culture.

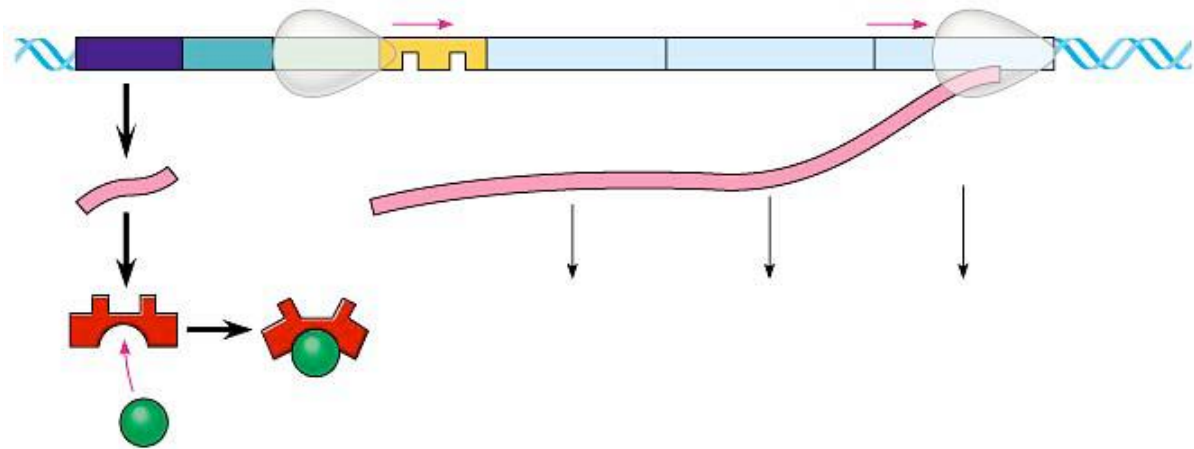
2. E. coli use a regulatory system called an operon. Identify the components with their functions of the operon.

3. Use the diagram (from the class notes) of the Tryp operon to outline how it regulated tryptophan levels.



4. Describe how the trp operon is a repressible operon.

5. Use the diagram (from the class notes) of the lac operon to outline how it regulates glucose levels.



6. Does the diagram above represent the condition for the absence or presence of lactose?

7. Describe what happens when lactose is absent.

8. How is the lac operon an inducible system?

9. How does the presence or absence of glucose influence the lac operon.

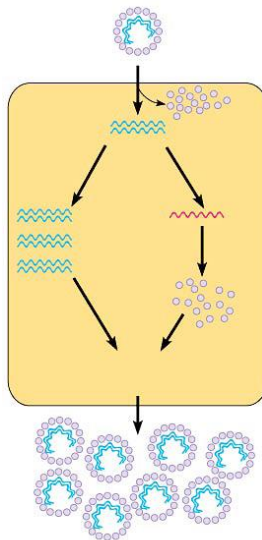
10. Describe the effect of each of the following control mechanisms.

- a. DNA methylation _____
- b. Histone acetylation _____
- c. Transcription factors _____
- d. Control elements _____
- e. Enhancers _____
- f. Activators _____
- g. DNA-binding domain _____

11. List several characteristics of viruses.

12. What are the two basic components of viruses?

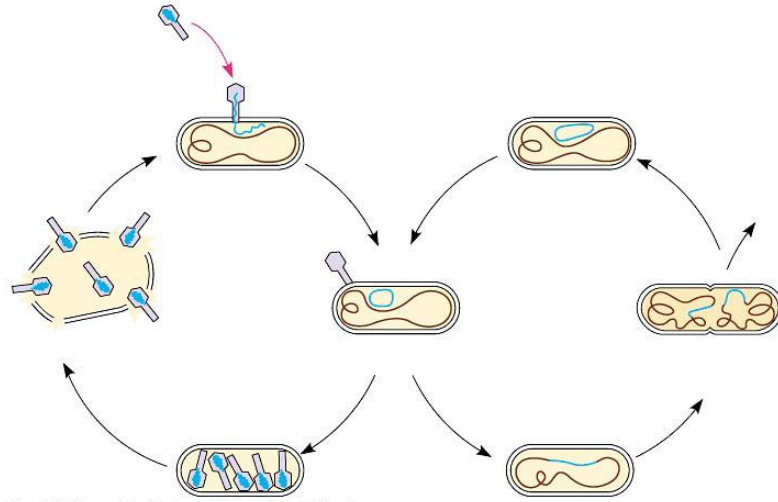
13. Use the diagram to help explain typical viral reproduction.



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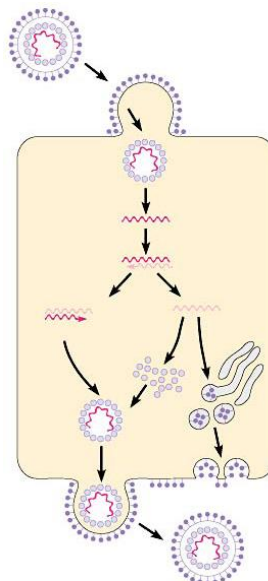
14. Identify the cycle used by the virulent phage.

15. Compare the lytic and lysogenic cycles.



16. What is the role of the viral envelope?

17. Outline the steps in the life cycle of the envelope viruses.



Name: _____

18. What is reverse transcriptase?

19. Which regions of the chromosome will typically be in the form of heterochromatin?

20. How does alternative RNA splicing affect gene expression?

21. How does RNA degradation affect gene expression?

22. How does protein processing and degradation affect gene expression?

23. Review the opportunities for gene regulation in eukaryotes from the text and from the lecture notes. Label and describe each possible regulatory mechanism.

