

AP Biology Microbiology unit Viruses, Bacteria and Immunity
Name _____

Chapter 18 Guided Reading Assignment

1. How was the existence of a virus finally confirmed and by whom?
2. How small are viruses?
3. What kind of nucleic acids are the viral genomes made of?
4. What is the name for a protein shell enclosing the viral genome?
5. What are the subunits of capsids?
6. What are viral envelopes and what is their function?
7. Where are the most complex capsids found?
8. Define host range.
9. List the full steps of the simplified viral reproductive cycle.
10. What is the phage reproductive cycle that culminates in the death of the host cell?
11. What kind of phage only reproduces by a lytic cycle?
12. How do bacteria defend themselves against phages?
13. What are the steps of the lytic cycle of a T4 phage?

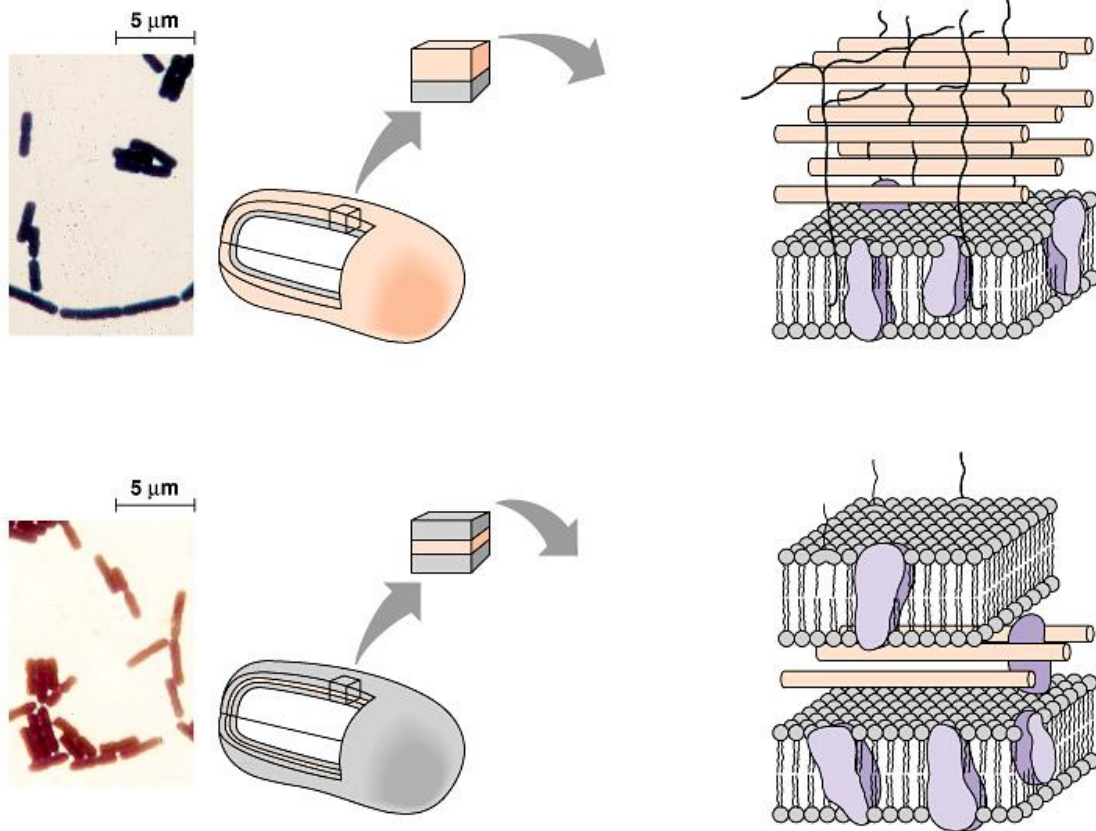
14. What is the phage reproductive cycle that replicates the phage genome without destroying the host?
15. What are phages called that are capable of using both modes of reproduction?
16. What is a prophage?
17. What is an example of the interaction between a prophage and a bacterium?
18. What is the use of a viral envelope in animal viruses?
19. Does this reproductive cycle kill the host cell?
20. What are retroviruses and how do they use reverse transcriptase?
21. Describe the reproductive cycle of an enveloped RNA virus.
22. Describe the reproductive cycle of HIV, a retrovirus.

23. Is it believed that viruses evolved before or after the first cells appeared and what evidence is used to support the idea?
24. What are vaccines?
25. What are the three processes that contribute to the emergence of viral diseases?
26. List and explain the two major routes that plant viruses are spread.
27. What are viroids?
28. Define prions.
29. What is the main component of most bacterial genomes?
30. How is the DNA arranged in the nucleoid region of the bacterial genome?
31. What is a plasmid?
32. Describe the process of binary fission.
33. Why do mutations make such a large contribution to bacterial genetic variation as compared to humans?
34. What is the process of alteration of a bacterial cell's genotype by the uptake of naked, foreign DNA from the surrounding environment?
35. What famous experiment in the previous unit described this process?
36. Define transduction.
37. List the generalized steps of transduction.

38. What is the process of direct transfer of genetic material between two bacterial cells that are temporarily joined?
39. What structure joins them?
40. What generally must be present for the sex pili to donate DNA during conjugation?
41. Define transposable elements.

Chapter 27 Guided Reading

1. What are the three most common shapes of prokaryotes?
2. How does a cell wall help a prokaryote survive? (three ways)
3. Define the following terms:
 - a. Peptidoglycan
 - b. Gram stain
 - c. Gram-positive
 - d. Gram-negative
 - e. Capsule
 - f. Pili
4. Explain the movement of prokaryotes. (Be sure to include taxis)



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5. Where do prokaryotes store their chromosome?
6. Describe the process of the creation of an endospore and why this helps the prokaryote.
7. Discuss a few ways in which prokaryotes adapt to their environment.

8. Explain in detail the different modes of nutrition in a prokaryote. Be sure to include energy sources, carbon sources, and an example of the organism that uses this mode.
9. Compare and contrast the three metabolic relationships to oxygen.
10. How does nitrogen fixation help prokaryotes become mostly self-sufficient?
11. Give an example of metabolic cooperation.
12. Compare and contrast the three domains, bacteria, archaea and eukarya.
13. Define the following terms
 - a. Extremophiles
 - b. Extreme thermophiles
 - c. Extreme halophiles
 - d. Methanogens

e. decomposers

14. Describe, all symbiotic relationships.

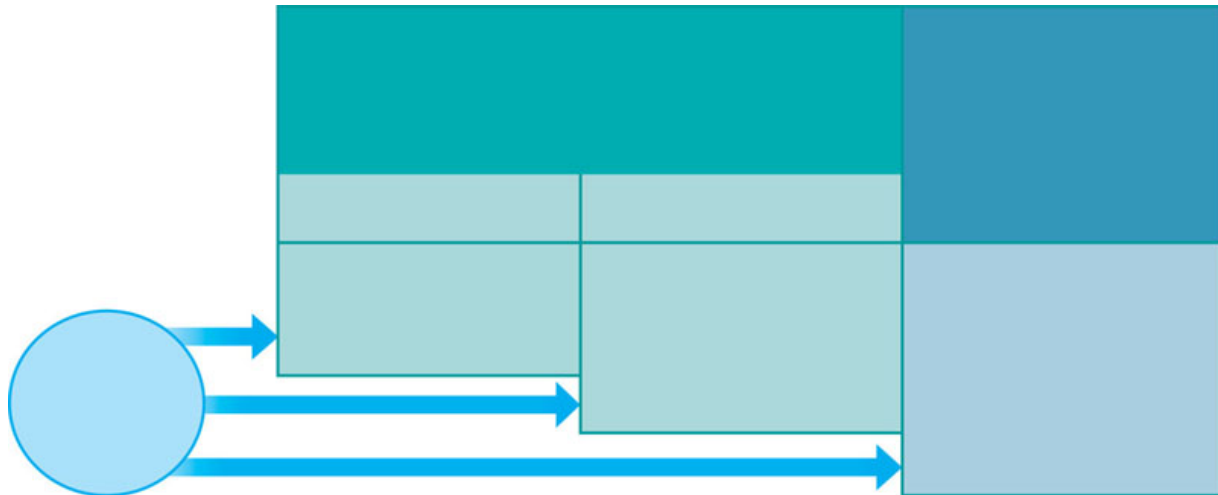
15. Compare and contrast exotoxins and endotoxins.

16. Explain bioremediation and how it helps nature by using prokaryotes.

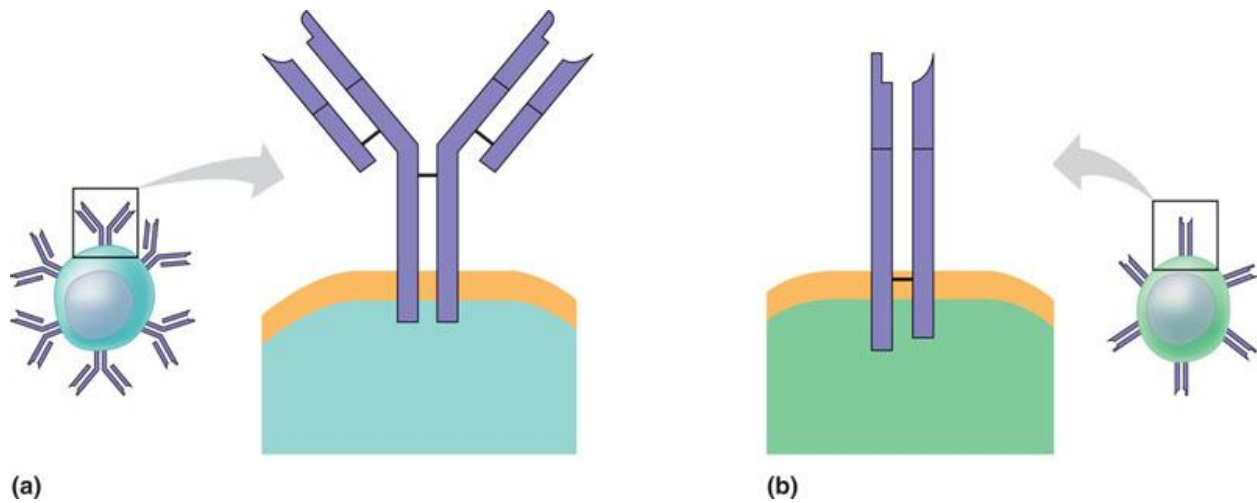
- Immunoglobulin Genes
 - Immunoglobulins → (made by _____);
 - 2 parts to the polypeptide
 - 1.
 - 2.
 - Combining many different C and V regions gives a great variety of polypeptides (antibodies)

Chapter 43 Guided Reading

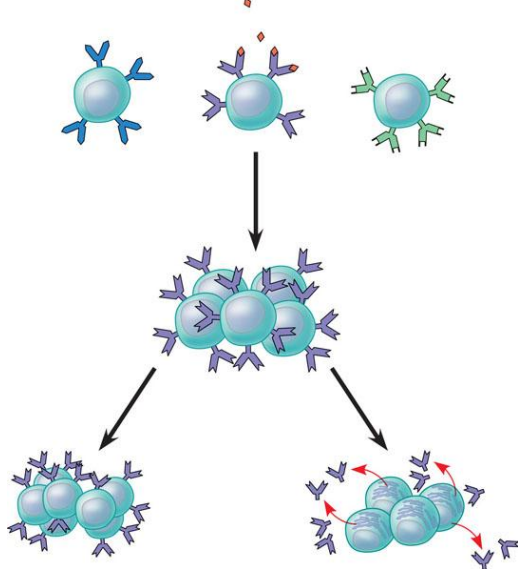
1. Label the diagram below:



2. Contrast the four types of leukocytes (white blood cells).
3. Describe the process of phagocytosis by macrophages.
4. Describe the role of histamine in the inflammatory response.
5. Define the following terms:
 - a. Natural Killer (NK) cells
 - b. Antigen
 - c. Epitope
 - d. B lymphocyte
 - e. T lymphocyte
6. Label the diagram below concerning antigen receptors on lymphocytes.



7. Label the diagram below concerning clonal selection of B cells:

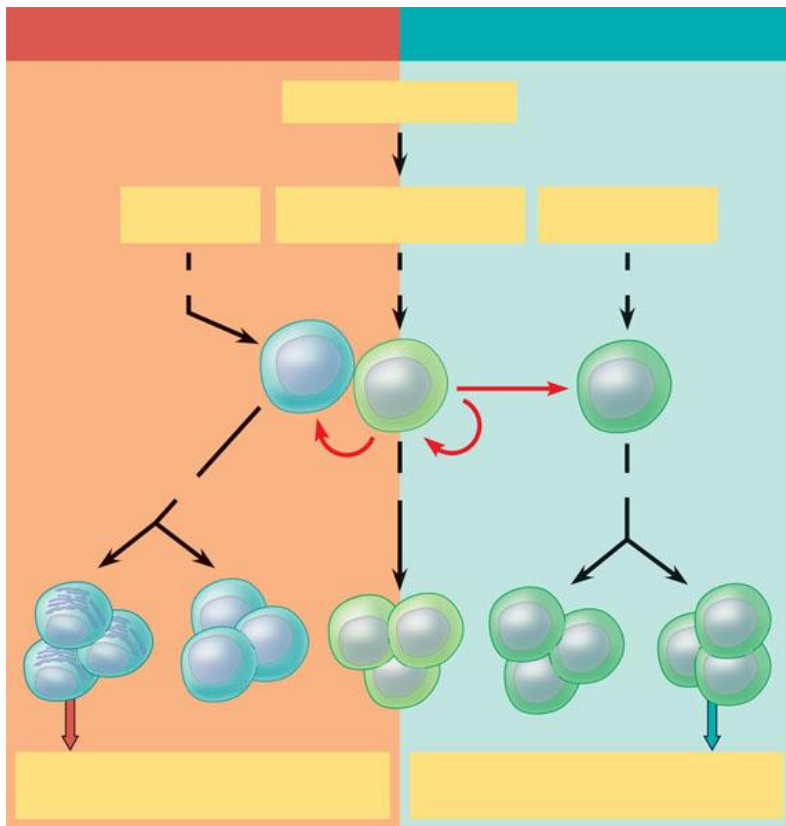


8. Contrast the primary immune response with the secondary immune response.

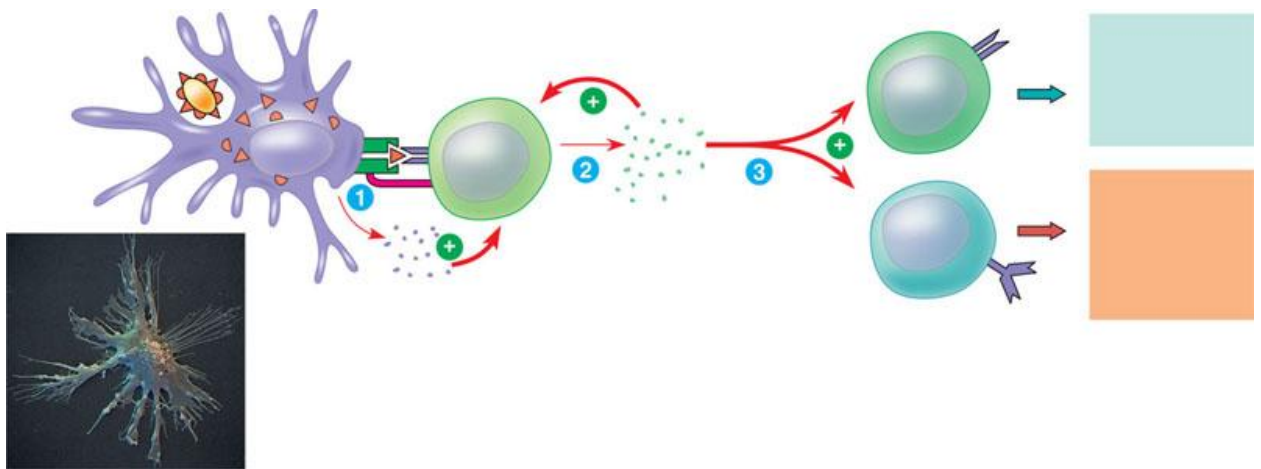
9. Define the following terms:

- a. Humoral immune response
- b. Cell-mediated immune response
- c. Helper T cell

10. Label the following overview of the acquired immune response (use the figure 43:10 on page 909):



11. Label the following diagram concerning the role of helper T cells. Use the figure 43:11 on page 910)



12. Contrast active and passive immunity:

13. Describe the various compatibilities and incompatibilities of the various blood types, including Rh factors.

14. Describe how MHC molecules are responsible for rejection of tissue or organ transplants

15. Label the diagram below concerning the allergic response.

