

How do the various components of the immune system work together to keep us free from disease?

- Viruses have profound effects on organisms
- The body has several defenses against foreign invaders
- What is the relationship between a disease and a pathogen?
- Microorganisms have an essential role in life processes and cycles on earth.

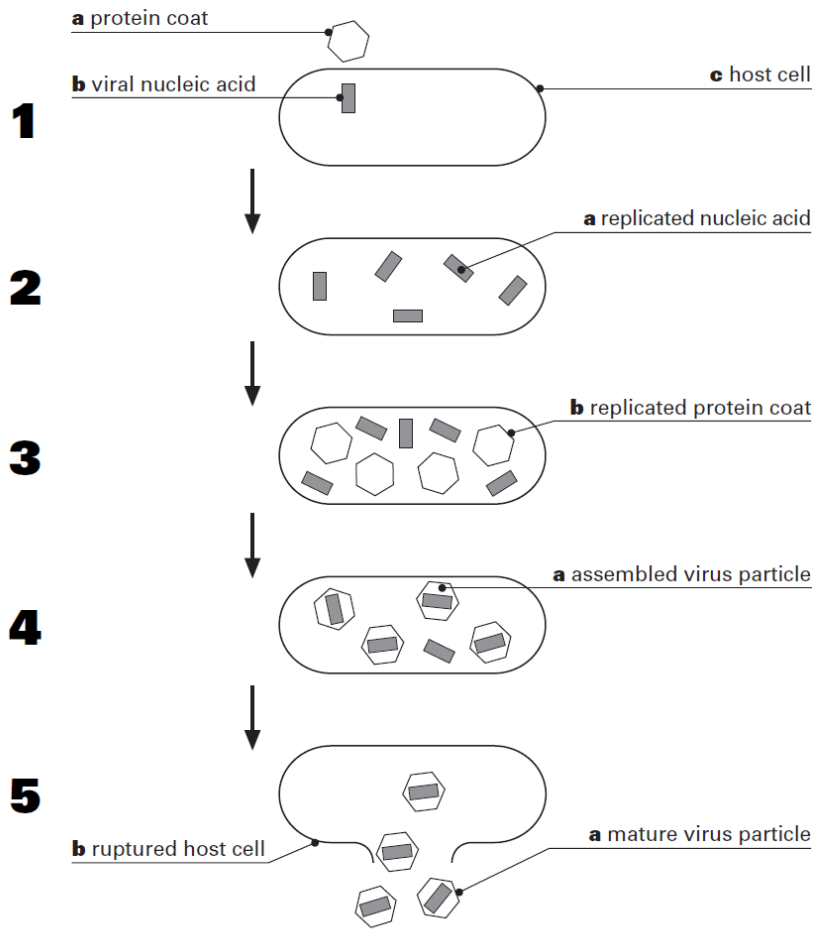
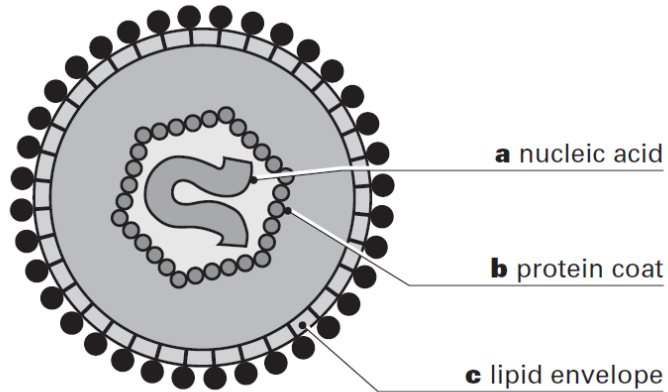
Key Vocabulary	Assignments	
	Chapters 24, 25, & 48	
Antibodies	#1 Skim section 24-1 (pages 457-473) A. Use a T chart to differentiate the two prokaryotic domains. B. What are cyanobacteria and why should humans be thankful for their existence? C. Why should humans only be sorta/kinda thankful for enteric bacteria?	Due:
Antigens		
Archaea		
Bacillus		
Bacteria (eubacteria)	#2 Read section 25-1 (pages 488 to 490) A. What are the two essential components of a virus? B. Why are viruses not considered living?	Due:
Bacteriophage		
B-lymphocytes		
Chemoautotroph		
Coccus	#3 Read section 25-2 (pages 491 to 495) A. Compare and contrast the lytic cycle and lysogenic cycles. B. Why do many scientists believe that viruses evolved after cells?	Due:
Cyanobacteria		
Immunity		
Nonspecific protection		
Pathogen	#4 Read section 48-1 (pages 955 to 958) A. How did Koch test his hypothesis about the cause of anthrax? B. What chemical defenses does the skin use against pathogens? C. What is the role of phagocytes?	Due:
Peptidoglycan		
Phagocytes		
Prokaryotes		
Skin	#5 Read section 48-2 (pages 959 to 965) A. How does a vaccine stimulate an immunity to a disease? B. Describe primary and secondary immune responses.	Due:
Specific protection		
Spirillum		
T-lymphocytes		
Vaccination		
Virus		
White Blood Cell		

Viruses compared to cells

- Viruses are much smaller than most cells, measuring 30–300 nm in diameter.
- All viruses are parasites – they must use a living cell in order to reproduce.
- All types of organism are susceptible to virus infection, including bacteria.
- Viruses lack the membranous organelles (miniorgans) and other machinery of true cells.
- Outside of its host, a virus is inert; it cannot perform any of the activities that normally characterize living cells. So viruses are usually regarded as non-living entities, distinct from living cells.

Virus particles

- A virus particle (virion) consists of a core of nucleic acid (a) – either DNA or RNA – enclosed in a protein coat (b). The protein coat may be enclosed in a lipid envelope (c).
- Virions vary in shape; some are rod-shaped, others are spherical.



Viral reproduction

- 1 The viral nucleic acid enters the host cell, leaving the protein coat outside.
- 2-3 The genes of the viral nucleic acid instruct the host cell to replicate the viral nucleic acid and make new viral proteins.
- 4 Virus particles are assembled inside the host cell.
- 5 Mature virus particles are released from the host cell. In some cases this causes the breakup (lysis) of the host cell.