

**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.

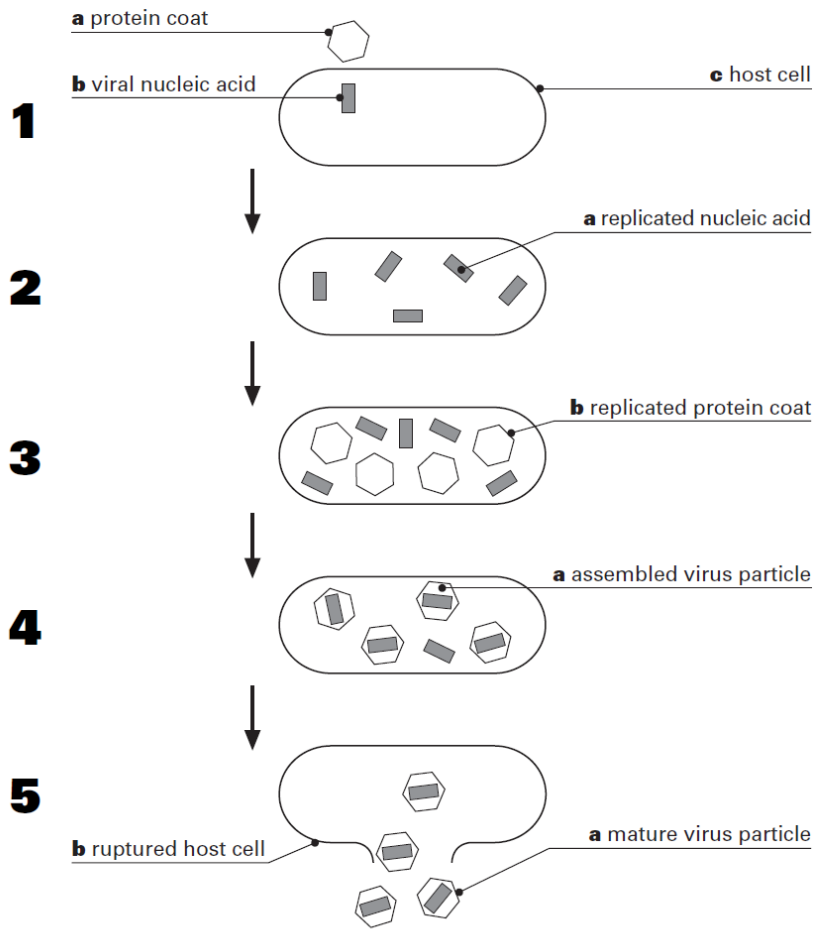
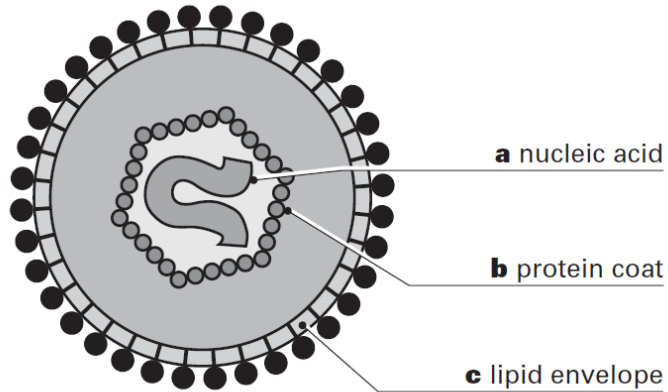
Key Vocabulary	Assignments	
	Chapters 24, 25, & 48	
Antibodies	<b>#1 Skim section 24-1 (pages 457-473)</b> A. Use a T chart to differentiate the two prokaryotic domains. B. What are cyanobacteria and why should humans be thankful for their existence? C. Why should humans only be sorta/kinda thankful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