

Viruses (p. 434 – 441)

I. Is A Virus Alive?

1. Define the term virus.

Virus – segments of nucleic acids contained in a protein coat
(Not Alive!)

2. Viruses are a special type of cell that is very small in size.

Circle One : True ☐ False ☒ (10-400 nanometers)

3. Define the term pathogen.

Pathogen – agents that cause disease
(viruses, bacteria, protists, fungi, cancer)

4. Circle the letter of the sentence that is false about why viruses are not living.

- a. Viruses do not achieve homeostasis. - true
b. They do not metabolize nutrients. - true
c. Viruses are incapable of reproducing. ☒ (Very effective!)
d. Viruses do not grow. - true

False →

5. Who discovered the existence of viruses in 1935?

Wendell Stanley (Tobacco Mosaic Virus)

II. Viral Structure

1. Match the viral components with the correct definitions.

- | | |
|----------------------------|---|
| 1. <u>C.</u> Capsid | A. Proteins with attached carbohydrate molecules. |
| 2. <u>D.</u> Nucleic Acid | B. Viral membrane surrounding the capsid. |
| 3. <u>B.</u> Envelope | C. Protein coat of a virus. |
| 4. <u>A.</u> Glycoproteins | D. Consists of DNA or RNA. |

2. Viruses exist in a variety of shapes.

Circle One : True ☒ False ☐

3. Define the term bacteriophage.

Bacteriophage – viruses that infect bacteria

4. What does a T4 bacteriophage look like?

- Polyhedron capsid attached to a helical tail with "legs"

Examples:

- ① Ebola - long rod with filament
- ② Influenza - spherical, studded
- ③ Adenovirus - polyhedral

III. Viral Reproduction

1. Viruses are capable of living independently.

Circle One : True ☐ False ☒ (Need a host to survive)

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Virus
- means
"poison"

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and
p. 437

2. Define the term lytic infection (cycle).

Lytic Infection – cycle of viral infection, replication, + cell destruction (Lyse = burst)

3. Complete the flowchart about a lytic infection.

A bacteriophage attaches to a bacterium's protein capsid.

↓
The bacteriophage injects its DNA into the cell.

↓
The host cell makes copies of the genes of the virus.

↓
The virus wrecks the cell, causing it to shut down.

↓
The bursting of the cell releases new bacteriophage particles.

4. Define the term lysogenic infection (cycle).

Lysogenic Infection – viral genome replicates without destroying the host cell (Ex. - lambda bacteriophage)

5. Circle the letter of each sentence that is true about a lysogenic infection.

- a. The end result is the production of viral particles.
- ☒ b. The virus embeds its DNA into the host's DNA.
- ☒ c. The virus's DNA is replicated along with the host cell's DNA.
- ☒ d. A host cell makes copies of the virus indefinitely.

6. Viruses are very specific and only infect certain types of organisms.

Circle One : ☒ True ☐ False

IV. How HIV Infects Cells (Not in the book.)

1. Define the term retrovirus.

Retrovirus – viruses that contain RNA as their genetic information (may be dormant for long periods)

2. What happens when a retrovirus, such as HIV, infects a cell?

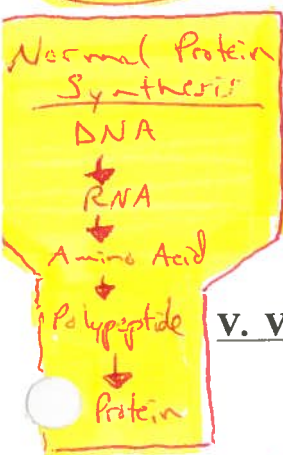
→ - They produce a DNA copy of their RNA.
(This DNA is inserted into the DNA of the host cell.)

V. Viral Diseases

1. Differentiate between prions and viroids.

Prion : Proteins with no nucleic acid (Causes normal proteins to misfold)

Viroid : Single strand of RNA with no capsid (Typically infect plants)
(Cucumbers, potatoes, avocados, oranges)



Mad Cow Disease

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