
Botany

Answer the following questions

1- Complete the missing words:

- a- Viruses are chemically consists of **protein** and **nuclic acid**
- b- The phage which infect bacteria called **bacteriophage**
- c- The filamentous form of bacteria called **Actinomycetes**
- d- Cell wall of diatoms consists of two overlapping halves, the outer is known as **epitheca** and the inner is known as **hypotheca**
- e- Viruses posses only one type of nucleic acid either **DNA** or **RNA**
- f- *Chlamydomonas* motile by two equal **flagella**
- g- The chloroplast of Spirogyra is **spiral** shape

2- Put true or false:

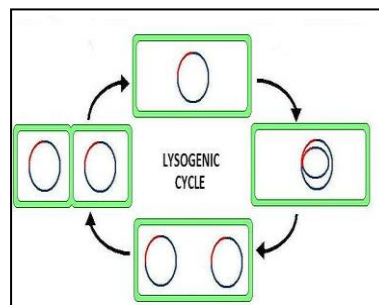
- a- Algae are photosynthetic organisms (True)
- b- Viruses are obligate parasite (True)
- c- *Pandorina* is a motile colony (True)
- d- Cell wall of bacteria is a gelatinous layer (False)
- e- Fungi are prokaryotic organisms (False)
- f- Bacteria vibriion have many flagella (False)

3- Compare between two pairs only of the following:

1- Lysogenic and lytic cycles

Lysogenic cycle

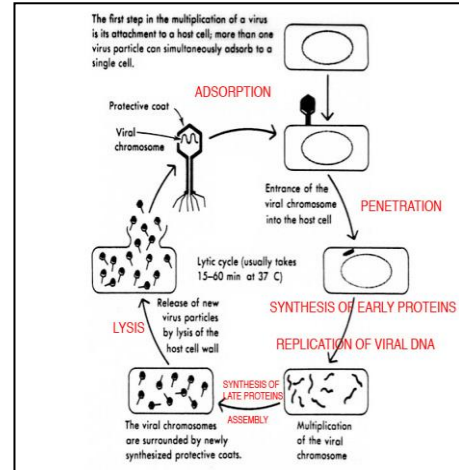
Lysogenic cycle, is one of two phases of viral reproduction. Lysogeny is characterized by integration of the bacteriophage nucleic acid into the host bacterium's genome. The newly integrated genetic material, called a prophage can be transmitted to daughter cells at each



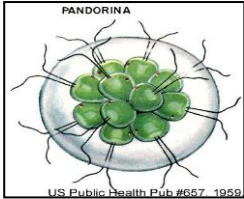

subsequent cell division, and a later event can release it, causing proliferation of new phages via the lytic cycle. Lysogenic cycles can also occur in eukaryotes, although the method of incorporation of DNA is not fully understood.

Lytic cycle

The bacteriophage is a virus composed of a strand of DNA and a protein coat, the virus attaches to the bacterium and invasion takes place during viral replication, a molecule of viral DNA is synthesized then enzymatically cut into multiple sections. The sections are packaged with viral protein. then the bacterium lyses and releases the viruses.



2- Pandorina and Volvox

<i>Pandorina</i>	<i>Volvox</i>
<p>-It is a spherical solid colony of 16 <i>chlamydomonas</i> cells closely packed together and surrounded by a mucous layer.</p>  <p>US Public Health Pub. #667-1959</p>	<p>-It is a hollow sphere colony with a large number of cells.</p> 
<p>- They are motile colonies</p> <p>-There are no division of labour</p> <p>-Asexual reproduction takes place by formation of daughter colonies.</p> <p>-Sexual R-takes place by formation of isogametes or uni isogametes.</p>	<p>The cells distinguished to</p> <p>Vegetative cells connected together by cytoplasm strands, the responsible for motility and nutrition.</p> <p>Gonidia, they are large in size than vegetative cells and smaller in number. They produce daughter colonies (Asexual reproduction)</p> <p>Sexual cell: they are antheridia and oogonia, the former are the male cells which produce antherozoids.</p> <p>The oogonia are the female cells which produce female gametes or eggs.</p> <p>-They are motile colonies</p> <p>-There are divisions of labour.</p>

3- Cell wall and capsule of bacteria

Cell wall	Capsule
<ul style="list-style-type: none">-It is rigid and elastic porous structure allowing the passage of solutes.-It's composition varies from one bacterial species to others ,but there is a basal structure in all species.-It protect the delicate cytoplasmic membrane and maintains the characteristic shape of the cell.-It play an important role in the cell division.	<ul style="list-style-type: none">-It is a slime layer of low optical density.-It is not an integral part of the cell, but a result of its metabolic activity.-It is greatly influenced by the environment .-It is the outer part of the bacterial cell.-It affords the cell some protection against drying .-Not all bacteria are produce capsule.

4- Viruses and other organisms

Viruses are infectious agents with both living and nonliving characteristics. They can infect animals, plants, and even other microorganisms. Viruses that infect only bacteria are called bacteriophages and those that infect only fungi are termed mycophages.

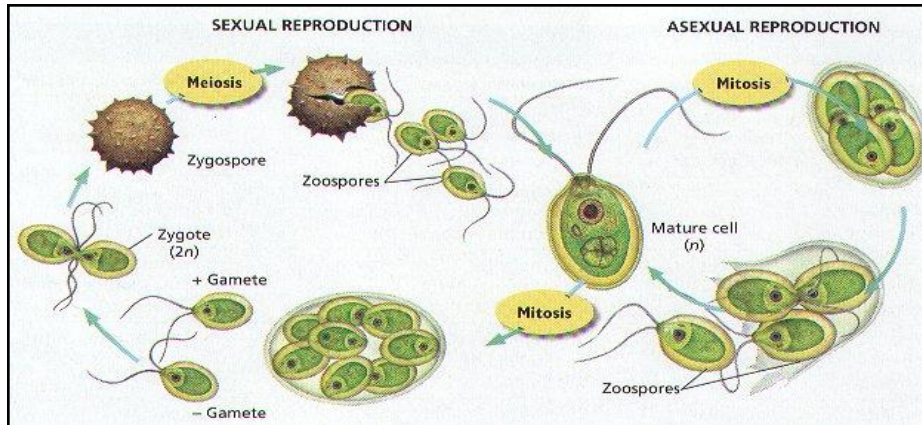
- Living characteristics of viruses
 - a. They reproduce at a fantastic rate, but only in living host cells.
 - b. They can mutate.
- Nonliving characteristics of viruses
 - a. They are a cellular, that is, they contain no cytoplasm or cellular organelles.
 - b. They carry out no metabolism on their own and must replicate using the host cell's metabolic machinery. In other words, viruses don't grow and divide. Instead, new viral components are synthesized and assembled within the infected host cell.
 - c. The vast majority of viruses possess either DNA or RNA but not both.
- Criteria used to define a virus
 - a. The vast majority of viruses contain only one type of nucleic acid: DNA or RNA, but not both.
 - b. They are totally dependent on a host cell for replication. (They are strict intracellular parasites.)
 - c. Viral components must assemble into complete viruses (virions) to go from one host cell to another.

4-Write the meaning of the following:

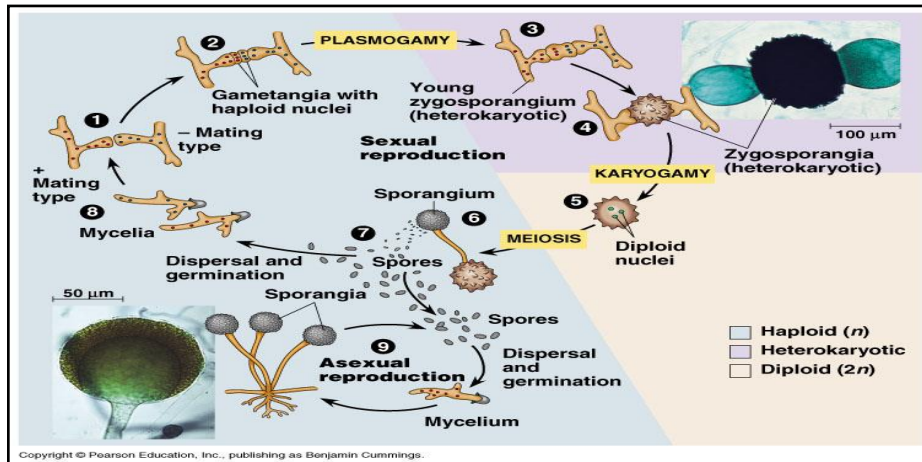
- 1- Coma shape bacteria (**Vibrio**)
- 2- Primitive solid colony (**Pandorina**)
- 3- Organs used for motile (**Flagella**)
- 4- Plants have no true nucleus (**Prokaryotic organisms**)

5-Draw only two life cycles of the following:

1-Chlamydomonas



2-Rhizopus



3-Fucus

