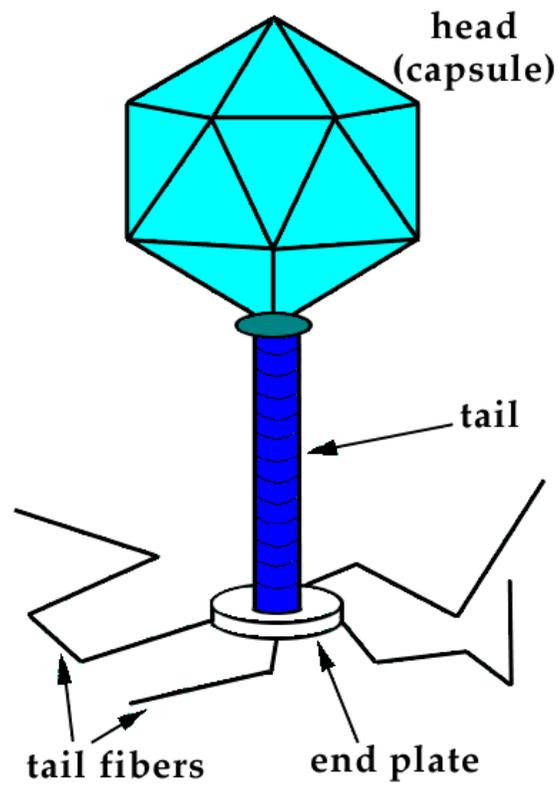


CHAPTER 05

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VIRUS



HOMOLOGY: Study of structures which are similar because of their common origin, but may differ functionally.

BIOCHEMISTRY: Study of chemical found in living organisms.

CYTOLOGY: Study of cell.

NOMENCLATURE: Scheme of naming living organism is called nomenclature. Now a days, 2 word naming system is acceptable.

VIRUS

Simplest and smallest non-living particle which measuring 17-450 microns. Virus means poison.

OBLIGATORY PARASITE

Virus is said obligatory parasite, because it always needs a living cell (host) to live in.

IVANOVSKY-1892

A Russian scientist who first discovered virus



STANLEY-1935

An American Scientist who isolated Tobacco Mosaic Virus commonly called TMV

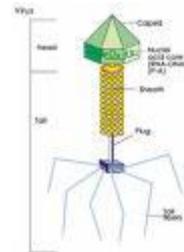


ELECTRON MICROSCOPE

A most modern type of microscope, which can magnify up to 10000000 times. It was invented in 1935 in USA

CAPSID

A protein found in the head of virus



PHAGE

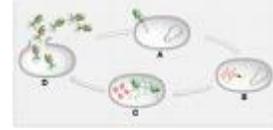
It refers to virus

BACTERIOPHAGE

A virus is said Bacteriophage when it goes in bacteria for multiplication

LYTIC CYCLE

A type of life cycle in which virus destroys bacteria after multiplying in it. This is also called **Master-Slave Relationship**



LYSOGENIC CYCLE

An other type of life cycle in which virus cooperates with bacteria in sending its genetic material to other bacteria. This is called **Host-Guest Relationship**

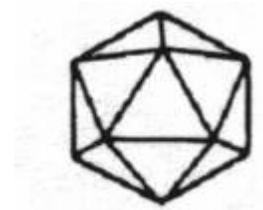


TOBACCO MOSAIC DISEASE: A viral disease of tobacco plant in which leaves become molted and white patches appear on leaf surface.



GENOME: Sum of total genes in an organism is called genome.

CAPSOMERES: Sub units which combine to make capsid protein in virus are called capsomeres. In virus, there are 5 different types of proteins. E.g. Virus of Hepatitis B has 2 proteins in its head.



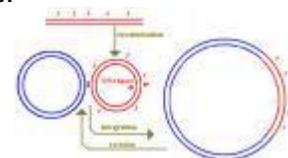
VIRAL ENVELOPE: An accessory structure of virus which protects. Some viruses have it and some don't have. Those which don't have are called un-enveloped.

MINUS STRAND RNA VIRUS: A group of viruses in which RNA works like mRNA and takes messages of RNA for cell.

VIROID: A type of virus which has no capsid protein.

TEMPERATE VIRUS: A type of virus which is capable to do lytic and lysogenic cycle.

PROPHAGE: A small portion of viral DNA which is inserted into bacterial DNA to make recombinant DNA. Prophage mostly remains inactive and is multiplied by bacteria. After some, time prophage is converted into full phage.



POLIOMYELITIS: A kind of viral disease caused by Poliovirus.



COLDS: It is a viral infection caused by Rhinovirus. The virus is un-enveloped plus-stranded RNA. There are 200 forms of this virus.



INFLUENZA: Influenza is caused by a virus that attacks mainly the upper respiratory tract – the nose, throat and bronchi and rarely also the lungs. The infection usually lasts for about a week. It is characterized by sudden onset of high fever, myalgia, headache and severe malaise, cough, and sore throat.



AIDS: Acquired Immunity Deficiency Syndrome. It is a viral infection caused by retrovirus. The virus attack on immune cells and destroys defensive system of body.



RABIES: A highly dangerous viral infection which basically infects animals of canine family such as dogs. The virus has been found in urine of bat also. Human beings become infected when, a rabies infected dog, bites and its saliva enters into human body. The cause of rabies is Rhabdovirus.



HORIZONTAL DISTRIBUTION: When plants get viral infection from their surroundings, it is called horizontal transmission.

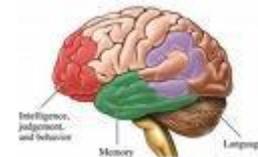
VERTICAL TRANSMISSION: When plant inherits viral infections from previous plant generations, it is called vertical transmission.

HIV: A kind of virus fully known as human immune virus, which is the cause of aids.

CAPOSI'S SARCOMA: A condition in which skin becomes disfigured due to AIDS.



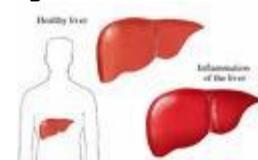
DEMENTIA: A condition in which AIDS patient loses its memory.



SEPTICEMIA: A condition in which blood becomes poisonous. This is one of the signs during AIDS.



HEPATITIS: Inflammation of liver, due to virus, toxic agents in drugs.



HEPATITIS A: A form of hepatitis caused by Non-enveloped RNA virus. This infection spreads through feces (stool).

HEPATITIS B: A form of hepatitis caused by an unusual DNA virus which has 2 proteins in head and 359 nucleotides of DNA. The infection is found in 200 million people.

HEPATITIS C: Third form of hepatitis caused by virus. The infection spreads through blood of infected person to a healthy person.

YELLOW FEVER: Yellow fever is a mosquito-borne viral disease. The disease occurs in tropical and subtropical areas. A mosquito called (*Aedes aegypti*), is responsible for transmitting the virus. The symptoms may be fever, headache, vomiting and backache. As the disease progresses, the pulse slows and weakens, and bleeding of the gums and bloody urine occur. Jaundice may also occur.

+STRAND RNA VIRUS: A virus whose genetic information consists of a single strand of RNA which encodes messenger RNA and protein. Examples of positive-strand RNA viruses include polio virus

-STRAND RNA VIRUS: A virus whose genetic information consists of a single strand of RNA which does not encode with messenger RNA. Examples of negative-strand RNA viruses include influenza virus, measles viruses, and rabies virus.

PRACTICE SHEET

- 1. Virus may consist of viral genome, Capsid envelop and -----**
 - (a) Tail fiber**
 - (b) Head
 - (c) Both
 - (d) None
- 2. The smallest virus have only four genes and largest have several hundreds**
 - (a) True**
 - (b) False
- 3. The protein coat that encloses the viral genome is called**
 - (a) Propein
 - (b) Capsid**
 - (c) Lapsid
 - (d) None
- 4. The viral envelop help the virus to infect their host**
 - (a) True**
 - (b) False
- 5. Viruses are generally classified on the basis of morphology and nucleic acids they contain**
 - (a) True**
 - (b) False
- 6. Virus that infect a bacterium is called**
 - (a) Bacteria
 - (b) Bacterium
 - (c) Phage
 - (d) Bacteriophage**
- 7. One of the following virus causes colds in human**
 - (a) Poliovirus
 - (b) Rhinovirus**
 - (c) Arbovirus
 - (d) None
- 8. More than 200 viruses that cause colds have been identified**
 - (a) True**
 - (b) False
- 9. One of the following is virus of HIV and was discovered in 1985**
 - (a) Retroviruses
 - (b) Poliovirus
 - (c) Rhinovirus**
 - (d) Arbovirus
- 10. In one of the diseases body's lymphatic cells T4 immune system is impaired**
 - (a) AIDS**

- (b) Hepatitis
- (c) Poliomyelitis
- (d) None

11. In 90% cases of HIV the transmission is caused by sexual contact

- (a) True**
- (b) False

12. The AIDS was first associated in homosexual communities in American cities

- (a) True**
- (b) False

13. HIV can directly infect brain cells in more than -----percent cases

- (a) 30
- (b) 40
- (c) 50**
- (d) 60

14. Azdthymidine or zidovudine is the best known drug which slows the progression of the disease

- (a) True**
- (b) False

15. Viruses reproduce by:

- (a) Attacking a host cell and then waiting for the cell to die.
- (b). Splitting in half once they enter a host cell and later growing.
- (c). Using the process of meiosis.
- (d). **Using the host cell's DNA to create new viruses.**

16. A virus is unique in that it:

- (a) Contains DNA.
- (b). Contains RNA.
- (c). Reproduces in a short time.
- (d). **cannot reproduce outside a living cell.**

17. Viruses are exceptions to the cell theory, but they have some characteristics of living things. What is one of these characteristics?

- (a). They are made up of many specialized cells.**
- (b). They contain genetic material.**
- (c). They reproduce by mitosis.
- (d). they contain chlorophyll.

18. A virus that attacks a bacterial cell is called a:

- (a). Provirus.**
- (b). Bacteriophage.**
- (c). Bacillus.
- (d). Spirillum.

19. Which type of viral infection literally takes over and quickly destroys the host cell?

- (a) Lytic cycle.**
- (b) Lysogenic cycle.
- (c). Antibiotic cycle.
- (d). Conjugation cycle.

20 Viruses can cause diseases in which of the following organisms?

- (a) Humans.
- (b) Plants.
- (c) Animals.
- (d). **All of the above.**

21. Which statement is NOT true of a virus?

- (a) It is a non-cellular particle.
- (b) It has a nucleic acid core.
- (c) It has capsid protein as coat.
- (d). **All are correct.**

22. One of the following diseases refer to the inflammation of liver

- (a) Gastrointitis
- (b) **Hepatitis**
- (c) AIDS
- (d) None

23. One of the following is transmitted by contact with feces from infected individual

- (a) **Hepatitis-A**
- (b) Hepatitis-B
- (c) Hepatitis C
- (d) All

24. One of the following is caused by unusual DNA virus

- (a) Hepatitis-A
- (b) **Hepatitis-B**
- (c) Hepatitis C
- (e) All

25. One of the following passes through blood from mother to child during pregnancy and after ward by sexual contact

- (a) Hepatitis-A
- (b) Hepatitis-B
- (c) **Hepatitis C**
- (f) All

The word virus refers to

- A) **Poison** B) Protein C) Sugar d) None
- 1. The first virus was discovered by**
A) Stanely B) Romanowisky **C) Ivanowisky** D) None
- 2. The TMV was isolated in 1935 by**
A) Ivanowisky B) **Stanley** B) Both C None
- 3. In size virus ranges from**
A) 17-350um B) 10-350um B) Both **D) None**
- 4. Because virus does not possess cell membrane, cytoplasm and nucleus, so it is called**
A) Single cellular **B) Non cellular** C) Monocellular d) All
- 5. Total number of DNA molecules in virus is**
A) **1** B) 2 C) 3 D)4
- 7. Type of life cycle in which virus exploits the Bacteria and behaves like master is called**
A) Lysogenic **B) Lytic** C LysisD) All
- 6. The head of virus contains a protein called**
A) Rapid B) **Capsid** C) Caprin D) Collagen
- 7. The bacteria that move with flagellum are called**
A) SessileB) Sedentary C) **Motile** D)All
- 8. Since mitochondria are missing in bacteria so it makes ATP by**
A) Plasma membrane B) Cell membrane **C) Both** D) None
- 9. First Bacterial cell was discovered by**
A) **Leeuwenhoek** B) Robert Hoek C) Robert Brown D) None
- 10. Since bacteria are present so they are called**
A) **Omnipresent** B) Omniparus C) Both D) None
- 11. Bacteria that make their food by chlorophyll are called**
A) Heterotrophic B) Autotrophic **C) Photosynthetic** D) None
- 12. One of the following is not bacterial product**
A) Insulin B) Penicillin **C) Both** D) None
- 13. Type of reproduction in which bacteria protects itself is called**
A) Fission B) **Endospore formation** C) Exospore D) All
- 14. The simplest method of reproduction in bacteria is called**
A) Fission B) Budding C) Transduction D) All
- 15. A type of sexual reproduction in which virus transfers bacterial DNA to another Bacteria is called**

- A) **Transduction** B) Transformation C) Conjugation D) All
- 16. The Streptococci pneumonia bacteria is the cause of**
 A) **Pneumonia** B) Cholera C) Diphtheria D) Small pox
- 17. The simplest and smallest organism is**
 A) Virus **B) Bacteria** C) Prion D) All
- 18. Bacteria that help its host is called**
 A) Symbiotic B) Parasitic C) Both D) None
- 19. Bacteria that draw their food from dead organic matter is called**
 A) **Saprotrophic** B) Symbiotic C) Parasitic D) None

QUESTION NO.	ANSWER KEY
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CHAPTER QUIZ

- 1. One of the following is example of kingdom Monera**
a) **Cynobacteria** b) Euglena c) Amoeba d) All
- 2. Virus is non cellular because it has**
a) **No cell membrane, cytoplasm and nucleus**
b) No nucleus
c) No cytoplasm
d) No cell membrane
- 3. One of the following refers to blue green algae**
a) Bacteria b) **Cynobacteria** c) Myxophysae d) None
- 4. The living organisms were initially classified into 2 kingdoms, Planate and Animalia. The five kingdoms were introduced by**
a) Robert Brown b) Robert hook c) **Robert Whitaker** d) none
- 5. One of the following is not studied in Botany**
a) Euglena b) Ferns c) Phanerogams d) **Trypanosome**
- 6. The cell is structural and functional unit of life and may be studied in**
a) Cyto-chemistry b) Cyto-biology c) **Cytology** d) All
- 7. Many cells similar in structure will make tissue, which may be studied in**
a) Anatomy b) **Histology** c) Cell biology d) All
- 8. Only Cell wall, cell membrane and ribosomes are present in**
a) Virus b) **Bacteria** c) Euglena d) All
- 8. The prokaryotic cell does not have proper nucleus and**
a) Cell membrane b) Cell wall c) Ribosome d) **Mitochondria**
- 9. In prokaryotic cell contains**
a) **Cell wall cell membrane ribosomes only**
b) Mitochondria, plastids only
c) Nuclear membrane only
d) Cytoplasm only
- 10. Since virus does not have cell membrane, cytoplasm and nucleus, so it is termed as**
a) a-cellular b) unicellular c) **non-cellular** d) All
- 11. The cell theory does not apply on**
a) Bacteria cell b) **virus** c) Euglena d) Metazoa
- 12. One of the following posses six legs and is studied in entomology**
a) Spider b) Scorpion c) **Grasshopper** d) None
- 13. The cell wall in prokaryotes contains**
a) Proteins b) **Murein** c) Cellulose d) Chitin
- 14. The cellular structure that contains enzymes for oxidation of glucose are found in**
a) Chloroplast b) Golgi material c) **Mitochondria** d) All
- 15. The statement that all living organisms are made up of cells refers to**
a) Definition of organism
b) Structure of organism
c) **Cell theory**
d) None
- 16. Primary cell wall is found in**
a) **Newly formed cells**
b) When cells become old
c) In all cells
d) None

17. **The plastids that produce yellow and orange color of fruits and flowers are**
 a) Chloroplasts b) Leucoplast **c) Chromoplast** d) Fragmoplast
18. **Intake of liquid material by in-folding of plasma membrane is termed as**
 a) Phagocytosis **b) Pinocytosis** b) Both a & b d) None
19. **Cell membrane in animals and plants is chemically composed of**
 a) Proteins b) Lipids c) **Both a & b** d) Phospholipid only
20. **One of the following is the isomer of glucose**
 a) **Galactose** b) Sucrose c) Maltose d) None
21. **Same molecular and different structural arrangement if true for**
 a) **Isomer** b) Monomer c) Polymer d) None
22. **The outer most boundary of plant cell is**
 a) Plasma membrane b) Cell membrane c) **cell wall** d) none

QUESTION NO.	ANSWER KEY
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