

# ***VIROLOGY***

***Defination :-*** Virology is the branch of microbiology , that deals with the study of viruses.

# VIRUS

- Virus is a very very tiny infectious particle or it is a typical type of infectious particle
- **Size** :- Ranges from 10 to 300 nm ( nano meter). Typical size is 100 nm.

Virus is 100 times smaller than Erythrocyte cell. Size of erythrocytes is around 8  $\mu\text{m}$ .

# MORPHOLOGY

Virus is very complex tiny particle, it is composed with different type of complex ***Nucleic acid*** (RNA and DNA).

***Capsid*** (Capsomers protein) :- Helical and Icosahedral symmetry

***Envelope Proteins*** (Glycoproteins)

Virus infects to the specific host cells based on suitable receptors.

# CHARACTERISTICS of VIRUSES

- It is a tiny complex infectious particle and it cannot be seen by ordinary microscope, normally it can be examined identified and differentiated by the electron microscope, NMR spectroscopy or X-ray Crystallography.
- Virus always could not grow in artificial media, always can filter and passes through biological or mechanical filters.

- Viruses always found in very diverse situations in this planet and they can habitat in bacteria, plants, animals and humans also.
- The most important characteristic of viruses is **“Strict Obligate Intracellular Parasite”**.
- ***Metabolism*** :- Do not have any kind of metabolism properties, it always depends on host cell metabolic machinery.
- ***Resistant to antibiotics*** :- Antibiotics do not work on viruses.

# The Common Human Viruses

- ❖ Pox, Parvo, Herpes, Paramyxo, Orthomyxo and Papova viruses.
- ❖ **Common Viral Diseases in Humans :-**
  - ***Small pox***, chicken pox (pox virus), transmission through respiratory route (droplet infection).
  - ***Rubella*** (toga) causes German measles.  
***Rubeola*** (paramyxo) causes measles.  
Transmission through respiratory root.

- ***Papillomas*** (Human papilloma virus) HPVs, causes warts, skin and mucosal membrane lesion, squamous epithelial growth (genital and planter warts).
- ***Polio virus*** causes poliomyelitis (CNS disease).  
Transmission through fecal and contaminated water.
- ***Rabies*** (rhabdo) virus cause zoonotic diseases.  
Transmission through animal bite (encephalitis, hydrophobia).
- ***Arbo virus*** (flavi) causes dengue fever (encephalitis).  
Transmission through vector (mosquito bite).

- ***Hepatitis A*** transmission by orofecal route.
- ***Hepatitis B*** transmission (parenteral route).
- ***Hepatitis C*** “ .
- ***Hepatitis D*** “ .
- ***Hepatitis E*** through orofecal route.
- ***Herpes Simplex virus*** (HSVs).  
Transmission by body fluid contact causes genital lesion.
- ***Human Immuno Deficiency Virus*** (HIVs) causes Acquired Immuno Deficiency Syndrome (AIDS).  
Transmission through homogeneous, heterogeneous (body fluid contact), Hematogenous and generation to generation.



- ***Influenza (A,B,C,D) virus*** causes common cold (URI).

Air born transmission. They are basically enveloped orthomyxo virus.

- ***Ebola virus*** :- Transmission through direct contact.

- ***Hepadna virus*** casuses Hepatitis.

- ***Corona virus*** (corona viridae family, enveloped virus) Alpha, Beta, Gamma, Delta.  
Transmission through Droplets and Fomites.

***THANKS***

***HARISH CHATURVEDI***