

Viruses

Don't belong to any kingdom
-It's not a plant or an animal.
-It's not a fungi or bacteria.

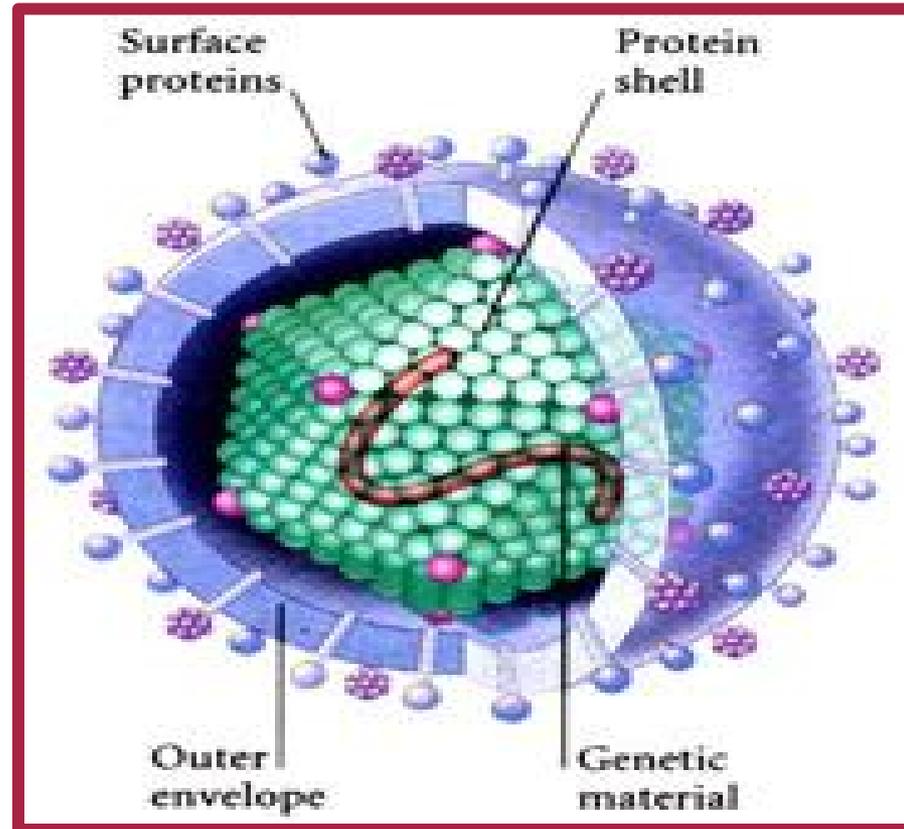
WHAT IS A VIRUS?

A virus is an infectious agent

It is made up of hereditary material (DNA or RNA)

The hereditary material is wrapped in a protein coating called capsid

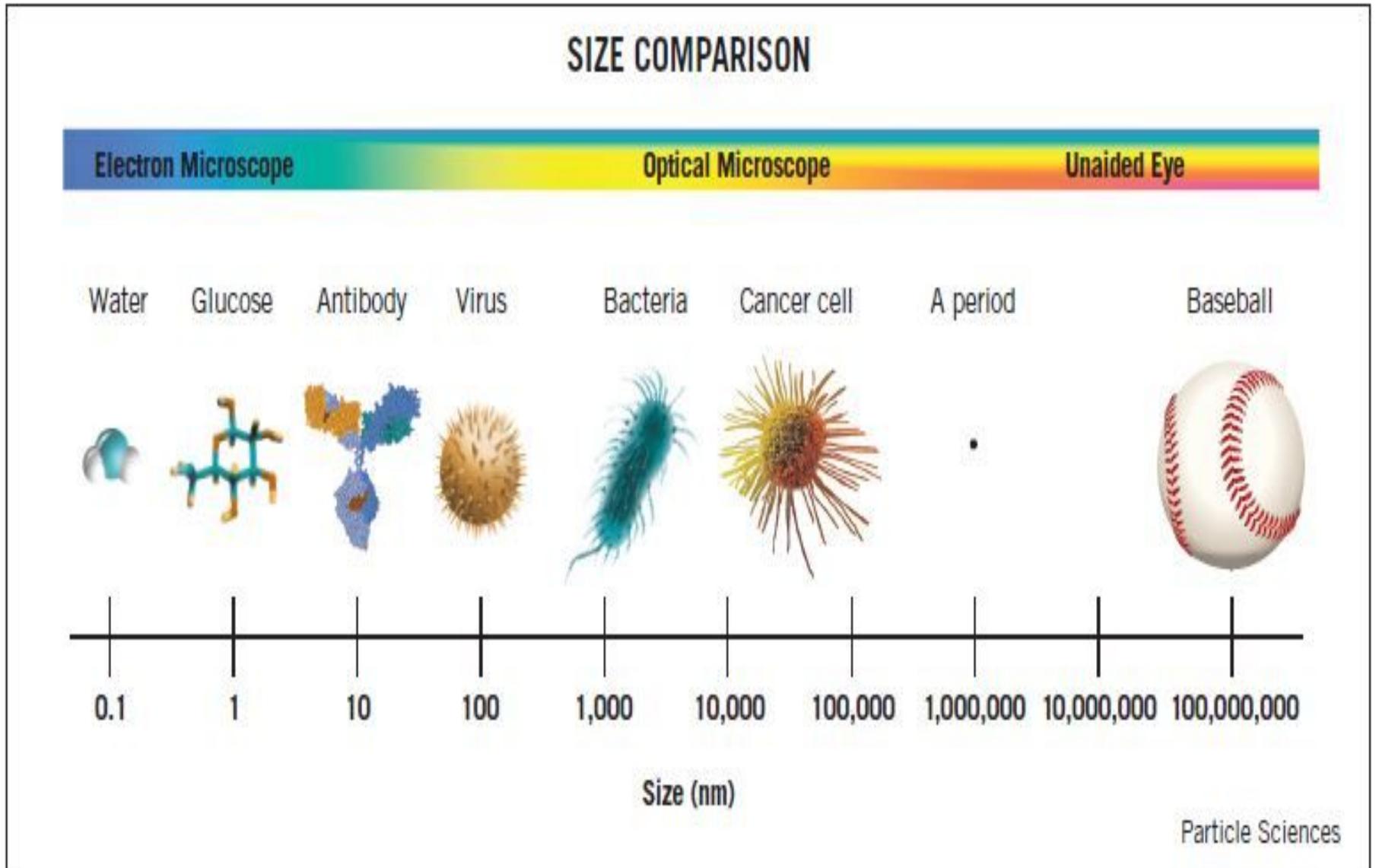
Viruses have no nucleus, no organelles, no cytoplasm,
no cell membrane



Viruses are grouped according to:

- **size,**
- **type of nucleic acid they contain,**
- **the structure of the capsid,**
- **host species,**
- **and immunological characteristics.**

Figure 1



Virus about 100 nanometers, bacterias are a few micrometers long
One inch is 25400 micrometers and 25 400 000 nanometers

Viruses are parasites— organisms that **depend** entirely upon another **living** organism (a **host**)

Active Viruses – enter a host cell to multiply.

Read Figure 17 page 232 of the handout

(The virus enters a cell, makes copies of itself and causes the cell to burst releasing more viruses.)

Importance:

***Harmful**

Causes disease—pathogenic

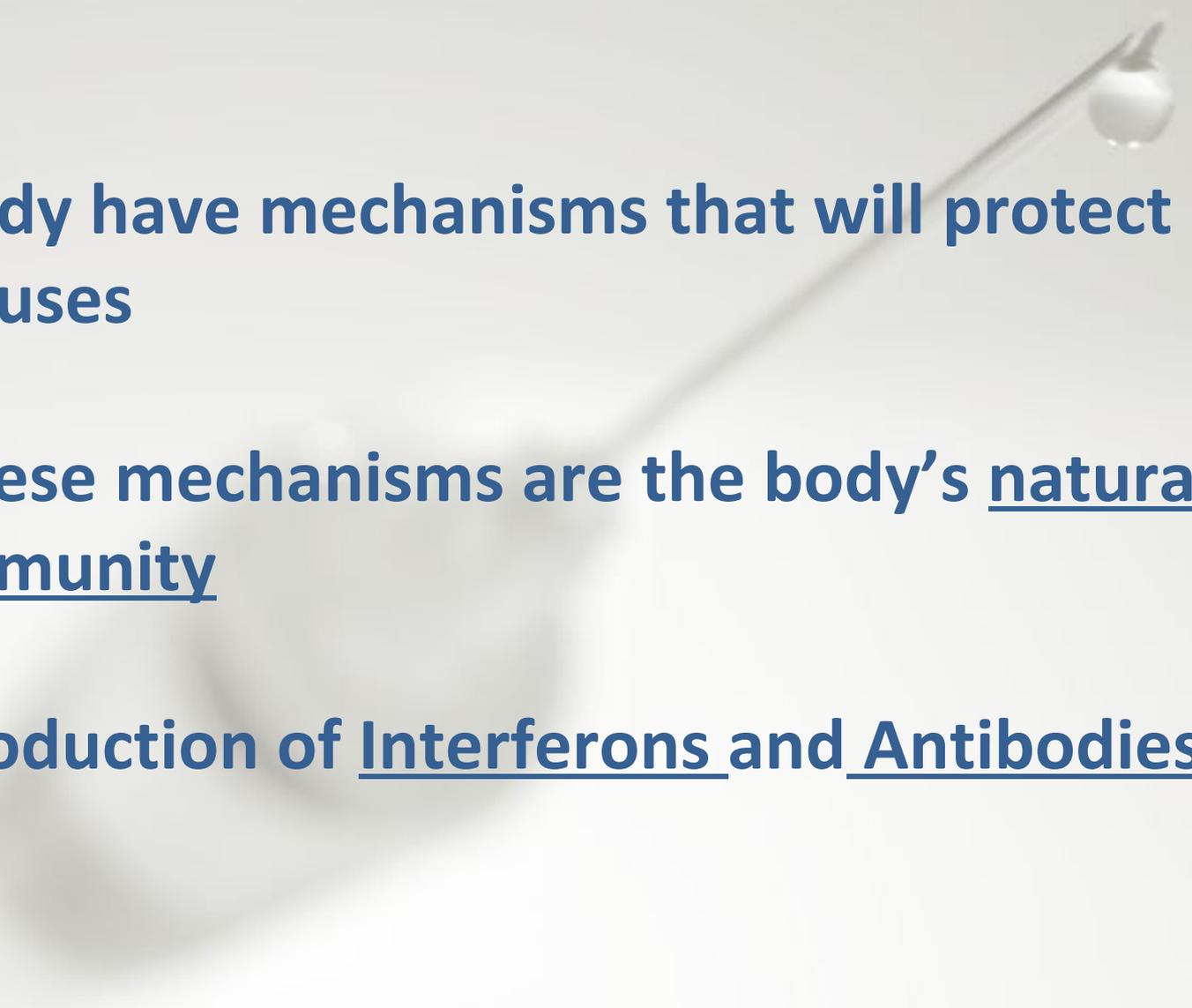
Disease producing agent—pathogen

**Human Diseases: Warts, common cold, flu,
Smallpox, Ebola, Herpes, AIDS, Chicken pox,
Rabies**

Prevention:

- 1- Viruses can be prevented with vaccines
- 2- Improving Sanitary Conditions
- 3- Separating patients with diseases
- 4- Controlling animals that spread the disease (mosquitoes, poultry, bats, mice...)

Vaccines are made from weakened virus particles and inoculated in the population.



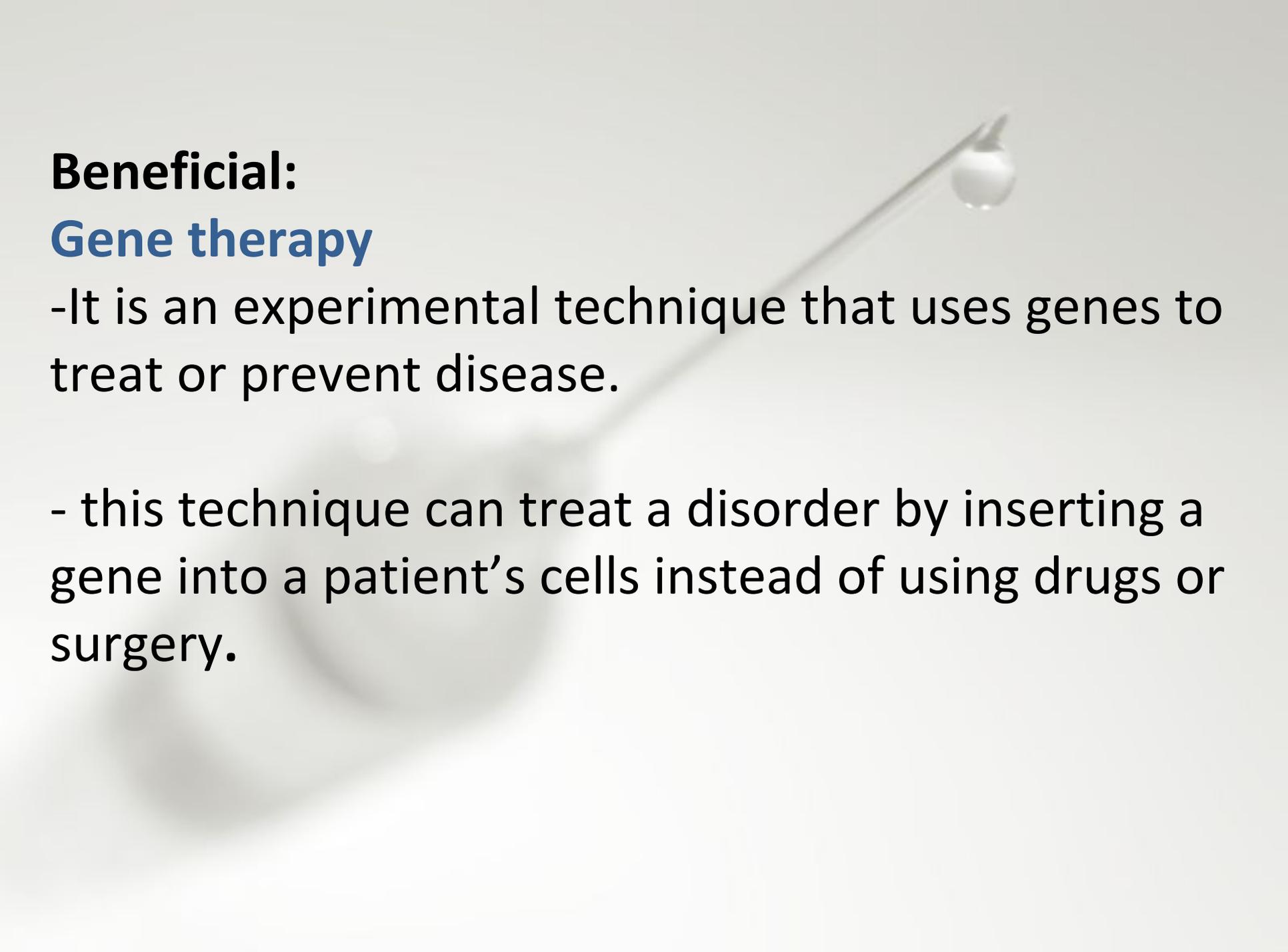
Body have mechanisms that will protect us against viruses

These mechanisms are the body's natural immunity

Production of Interferons and Antibodies

Interferon are proteins that are formed by the host cell in response to the presence of virus. Virus infected cell will release interferons to protect cells nearby from the viral infection.

Antibodies are proteins produced by the white blood cells to protect organisms from the attack of bacteria, fungi, virus or any other antigens



Beneficial:

Gene therapy

- It is an experimental technique that uses genes to treat or prevent disease.
- this technique can treat a disorder by inserting a gene into a patient's cells instead of using drugs or surgery.

Virus and gene therapy:

harmless virus carries good genes into cells, to be replicated and to substitute the defective gene