



Tikrit University  
College of Veterinary Medicine

# Lect.1 Practical Virology

Subject name: Biosafety levels

Subject year: Third-year

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SCAN ME

Lecturers link

**Virus:** define as an intracellular organism that is contain the genetic material which surrounded by protein

-In order to study the viral diseases , we need to recognize the shape, size and the structural compounds of each virus.

-Viral genome are DNA or RNA

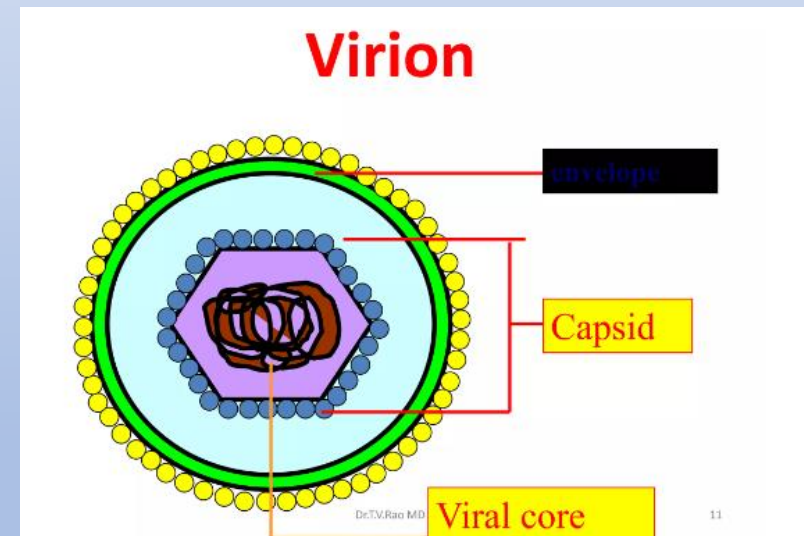
Terminology :

**Virion**= Virus particle

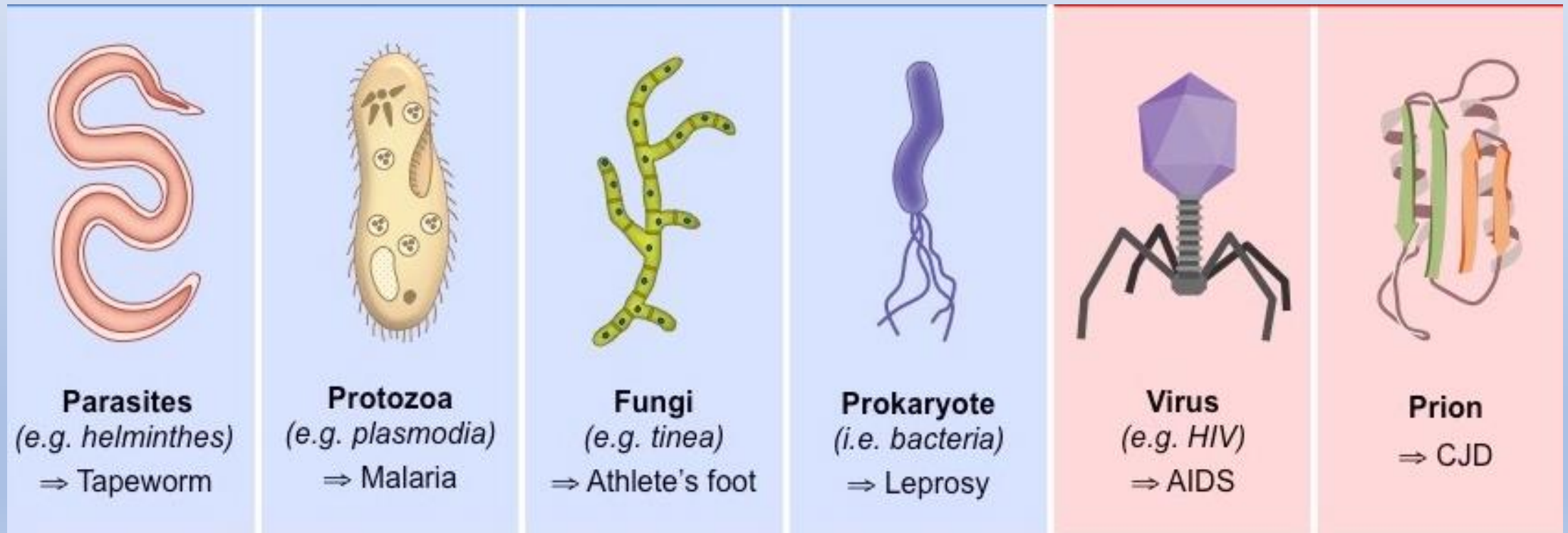
**Capsid**= Protein which coats the genome

**Capsid+Genome** = Nucleocapsid

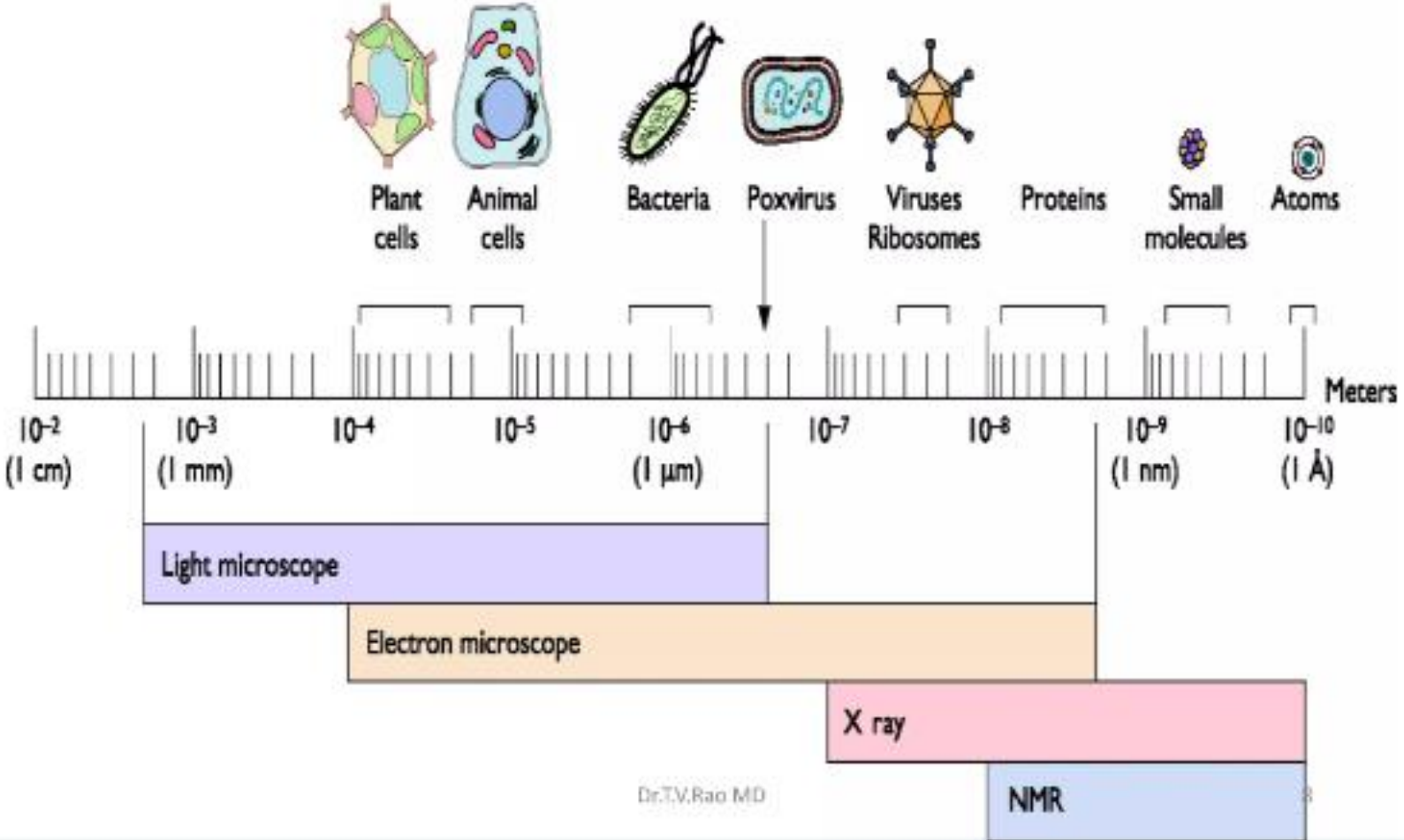
**Virion**= Define as the complete infectious unit of the virus



# Classification of Microorganisms



# The size of viruses



**Containment:** Is the process of the elimination of infectious agents and toxin of microorganisms in order to safely manage the biohazardous material in the laboratory environment , this method have been applying in the typical laboratories.

There are two levels of containment which including :

### 1-Primary Containment

- A- Personal Protective Equipment's (PPE)
- B- Biosafety Cabinet (BSC)
- C- Vaccination of the laboratory workers

## Personal Protective Equipment (PPE)

**The correct procedure to wear PPE steps are:**

- 1- Wash hands.
- 2- Put on boots.
- 3- First pair of gloves.
- 4- Gown.
- 5- Plastic apron.
- 6- Second pair of gloves (make sure gloves cover cuff of gown sleeves).
- 7- N95 particulate respirator.
- 8- Hair cover.
- 9- Goggles or face shield.



## 2-Secondary Containment:

A- Facility design :This facility is very important to protect the laboratory workers against the infectious agents and toxins.

### Biosafety levels:

Which include 4 levels of biosafety :

- 1- Biosafety level 1
- 2- Biosafety level 2
- 3- Biosafety level 3
- 4- Biosafety level 4

All the biosafety levels have been already covered in our previous lectures of applied immunology .

## Lab Safety symbols



Animal hazard



Sharp instrument hazard



Heat hazard



Glassware hazard



Biohazard



Laser radiation hazard



Chemical hazard



Electrical hazard



Eye & face hazard



Fire hazard



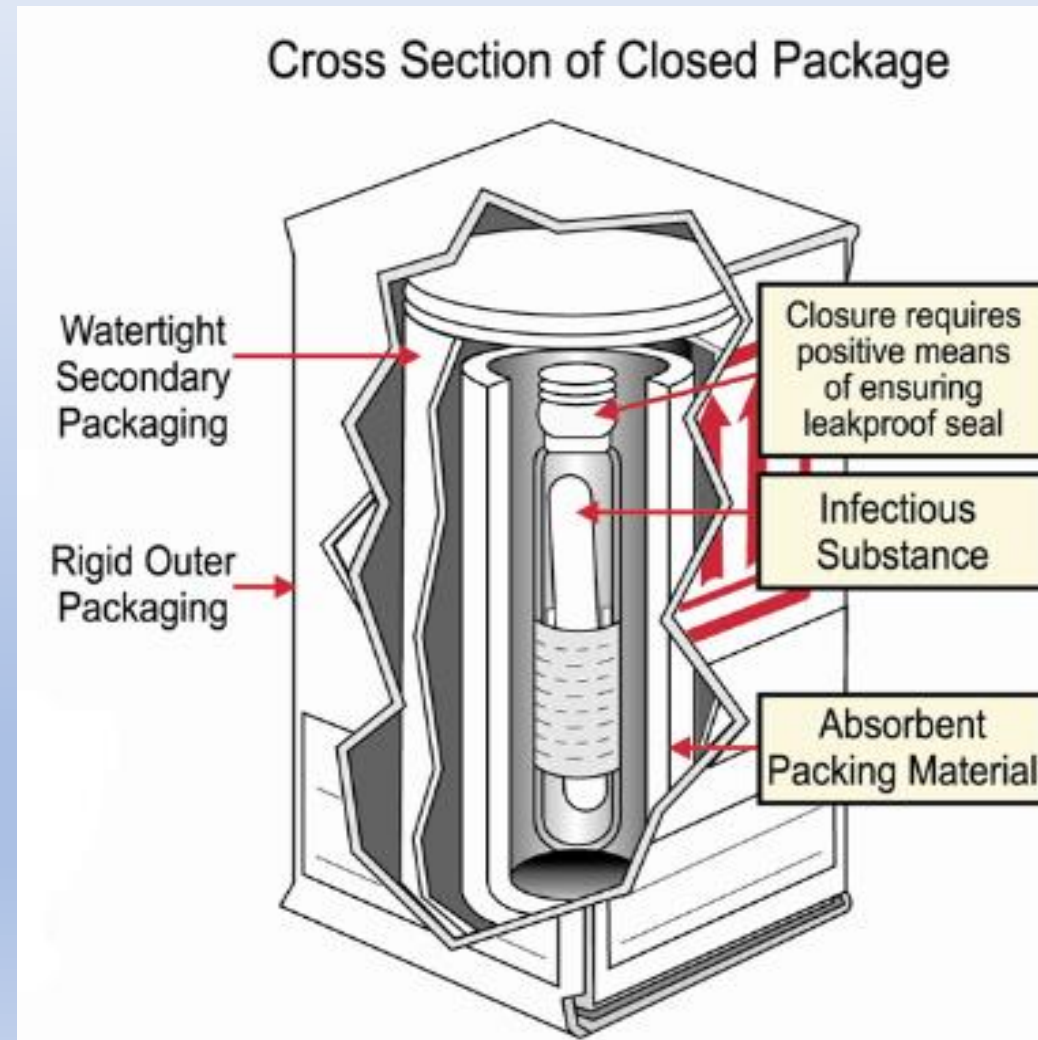
Radioactive hazard



Explosive hazard



## Triple Packaging System



## Triple Packaging System:

In order to prevent any leakages for the order of the infectious agents that delivered by the official companies , the following steps should be covered to avoid any trouble .

### 1- Primary Container

Which means that the specimen should be covered or wrapped with enough tissue/paper to prevent any leakages and these tissue material preferred to be made of absorbent type to prevent any leakages.

### 2-Secondary Container

This material of this container should be watertight which means impermeable for water or any kind of fluids with taking the consideration that if there is a wet ice then it must be put in sealed bags .

## Outer Container

This container provides a protection for secondary packaging against any destruction during the process of transporting the item .

Any explanation and details of information about the item and how to be stored and the required temperature that must be all provided and attached to the outer container .  
Also the complete address for the sender should be provided such as the company name , telephone number address and other details .

Also the complete address for the recipient should be provided as well .

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