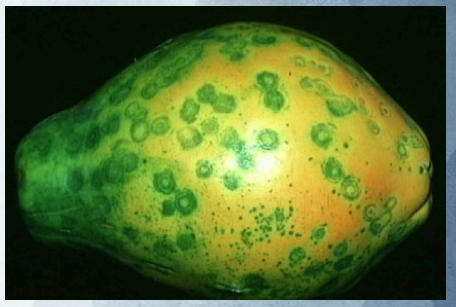

CHS3403 Principles of Plant Pathology in Cannabis and Medicinal Plant

8. Plant diseases in cannabis and herbs caused by viruses

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Topics.....

1. Shape and composition of plant virus
2. Virus damage to plants
3. Characteristics of plant diseases caused by virus
4. Transmission of plant virus.
5. Virus-induced plant diseases and disease prevention

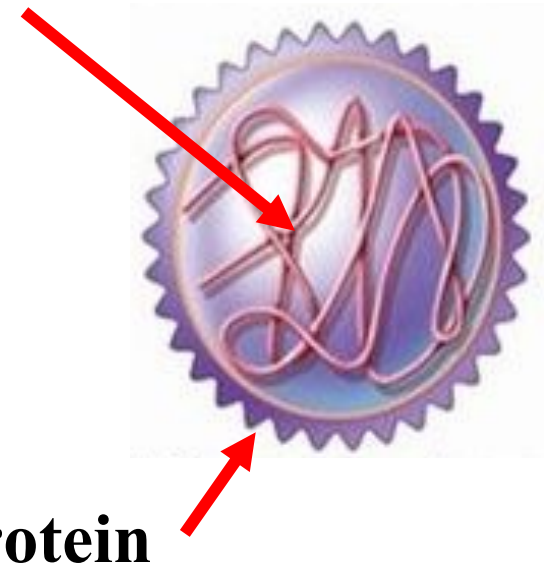
1. The shape and composition of plant viruses

1.1 What is a virus?

Viruses are plant parasites that can only grow by increasing the number of living cells. Viruses include:

RNA or DNA.

-Envelope protein



1. The shape and composition of plant viruses

1.2 Virus structure

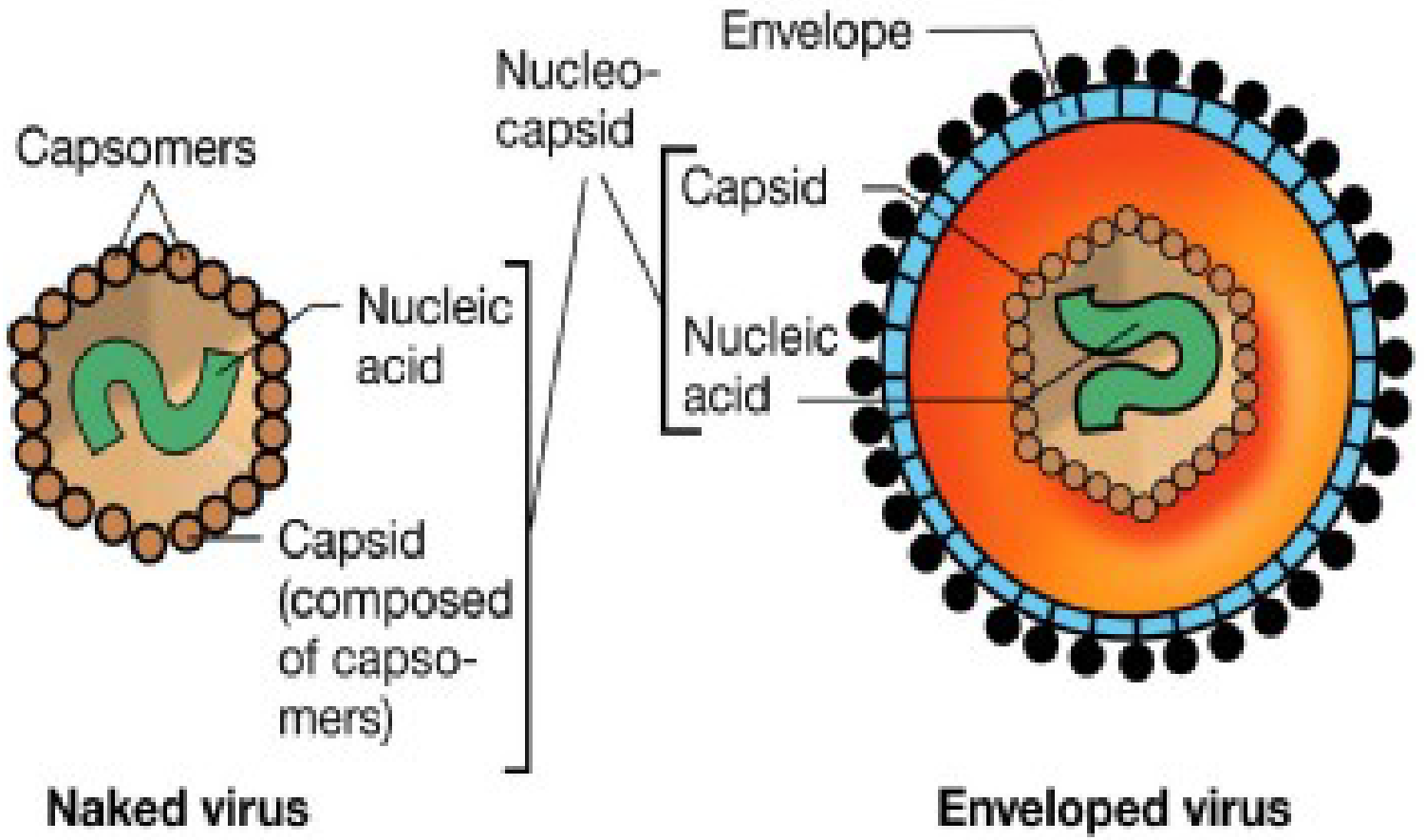
Viruses are classified as simple and uncomplicated microorganisms.

1. The naked virus is resistant to the environment and will not be damaged by ether, alcohol or bile and other fat solutions.

2. The foreskin virus will cover another layer.

1. The shape and composition of plant viruses

1.2 Virus structure



1. The shape and composition of plant viruses

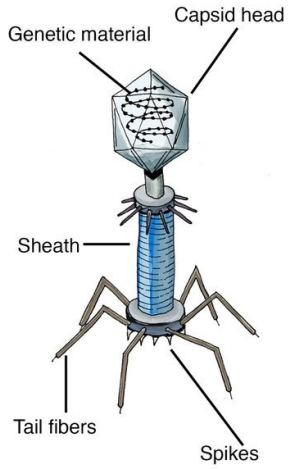
1.3 Main characteristics of virus

-The particle size is very small, nanoscale or 10-9 meters. It is not visible under ordinary microscope. It requires an electron microscope.

-Genetic material is found only in DNA or RNA.

-Protein synthesis system The virus itself has no successful protein synthesis system, which requires mechanisms in plant cells.

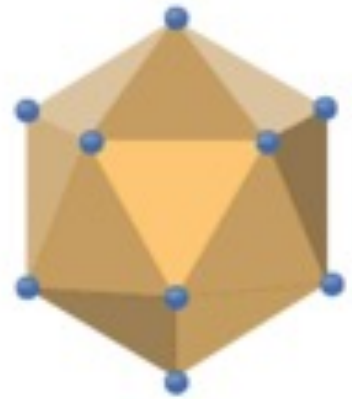
-Plant diseases, because viruses are parasites of plant cells, and use various resources to increase the number, thus affecting the development of plants.



1. The shape and composition of plant viruses

1.4 Characteristics of the virus Since viruses are composed of only 2 main components, nucleic acid and protein. The shape of the resulting virus is not difficult or complicated. which can be divided into shapes as follows

1. The cube structure is symmetrical. When you look at the cube and rotate it at different angles. It looks the same. It's called twenty faces twenty faces twenty faces.

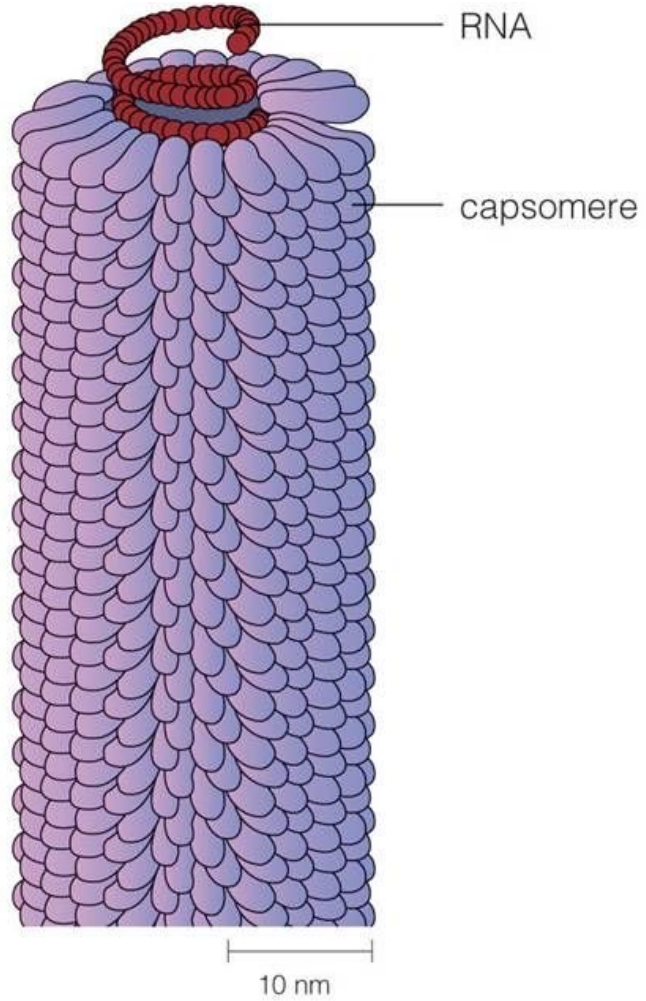


icosahedral

1. The shape and composition of plant viruses

1.4 Characteristics of the virus

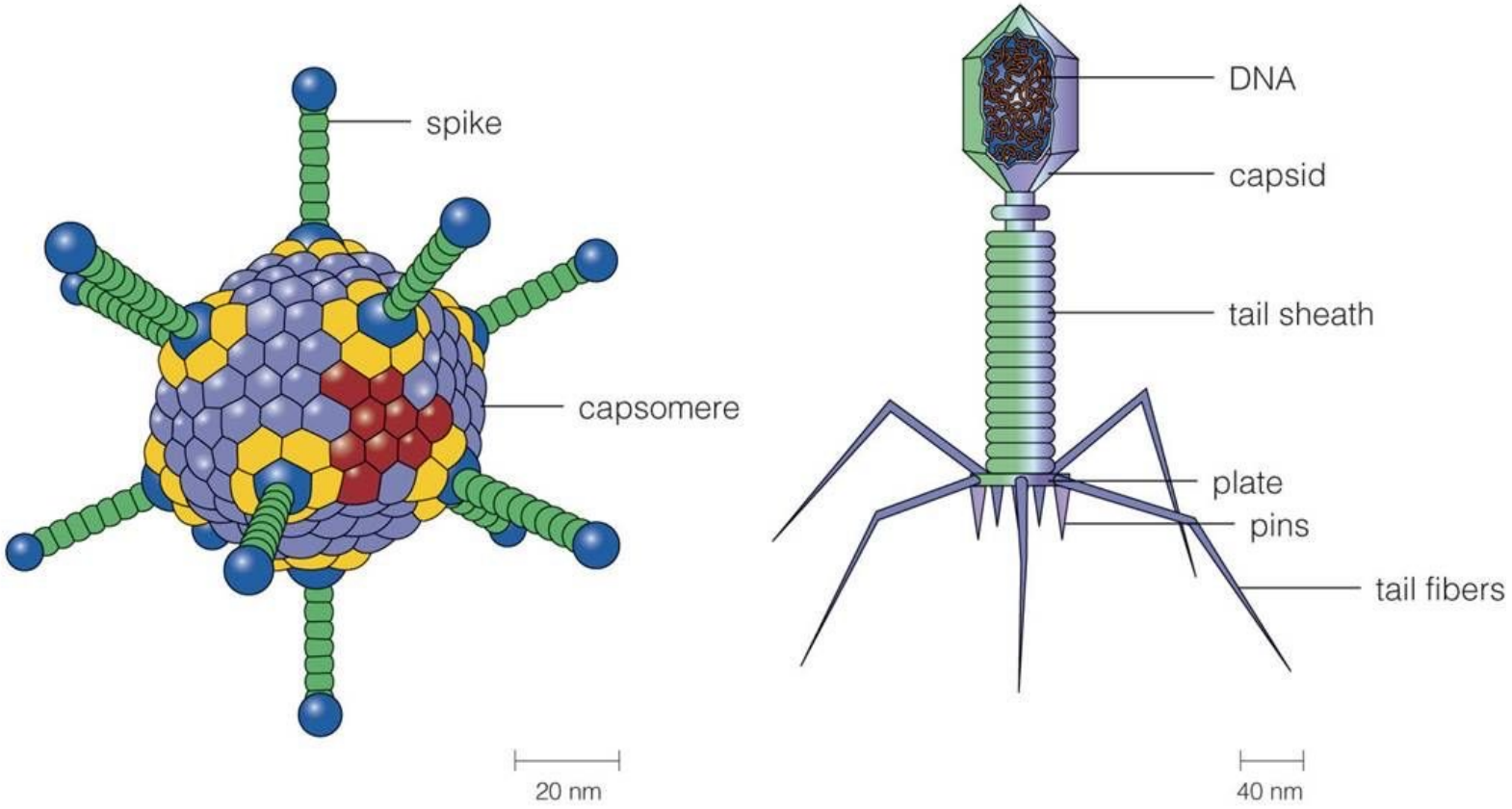
2. Cylindrical structure, consisting of spiral springs or spiral stairs, covering around nucleic acid. It is symmetric, called helical symmetry. In the absence of this type of capsule, the virus can be regarded as a straight line or a long line. Envelope: If the envelope is polygonal, such as round, oval or long line.



1. The shape and composition of plant viruses

1.4 The shape and composition of plant viruses

3. Complex structure: These viruses may have the first two shapes and specific shapes.



1. The shape and composition of plant viruses

1.5 Composition of plant viruses

1.5.1 Nucleic acid

It is the genetic material or gene of a virus. When it is contained in a virus particle, it can be collectively referred to as the virus genome, and the nucleic acid can be RNA or DNA depends on the type of virus.

1) Composition of nucleic acid

DNA is mainly composed of four kinds of nucleotides, usually named by the first letter of nitrogen base:

A=adenine

G=citrulline

C=cytosine

T=diamine U=uracil (RNA)

1. The shape and composition of plant viruses

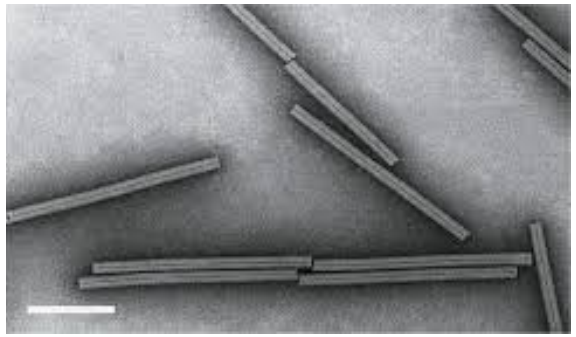
1.5 Composition of plant viruses

1.5.1 Nucleic acid

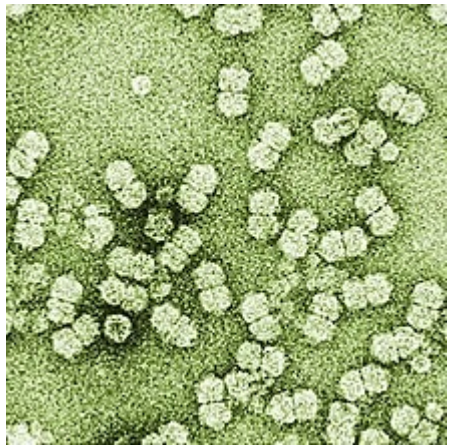
2) Data storage on virus genome. Viruses can store 4 types of data, such as:

-Monolithic genome is a virus with only one genome in the particle, such as tobacco virus.

-Biphasic genome is a virus with two separate genomes in each particle with the same characteristics (such as Begomovirus).



Tobamovirus



Begomovirus

1. The shape and composition of plant viruses

1.5 Composition of plant viruses

1.5.1 Nucleic acid

2) Data storage on virus genome. Viruses can store data in many ways, such as:

-Polygenic genome is a virus that contains more than 2 genomes. The most common is 12 genomes contained in particles, such as cucumber virus (2). Bromovirus (4 tablets), metronidazole virus (10-12 tablets)

-Multicomponent genome is a virus with multiple genomes, but separated in particles of different sizes. Alfamovirus (4 pieces, size 4-5)

1. The shape and composition of plant viruses

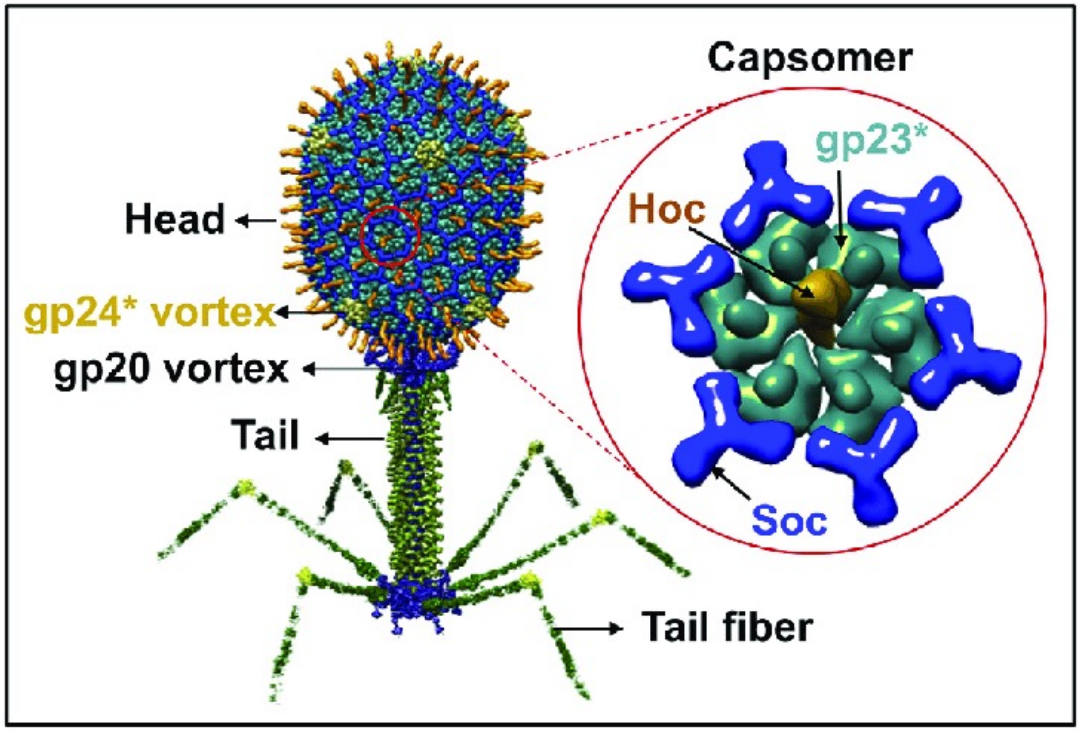
1.5 Composition of plant viruses

1.5.2 Protein

-The virus is synthesized in plant cells and contains 20 kinds of amino acids.

-The most common protein is coated protein.

-Protein-encapsulated particles, composed of protein subunits, combine to form a specific shape, called Capsomer, accounting for 55-59%. weight




THANKS