



Tikrit University  
College of Veterinary Medicine

## Lect. 10-Virology

Subject name: **DNA viruses: Parvoviridae and papillomaviridae**

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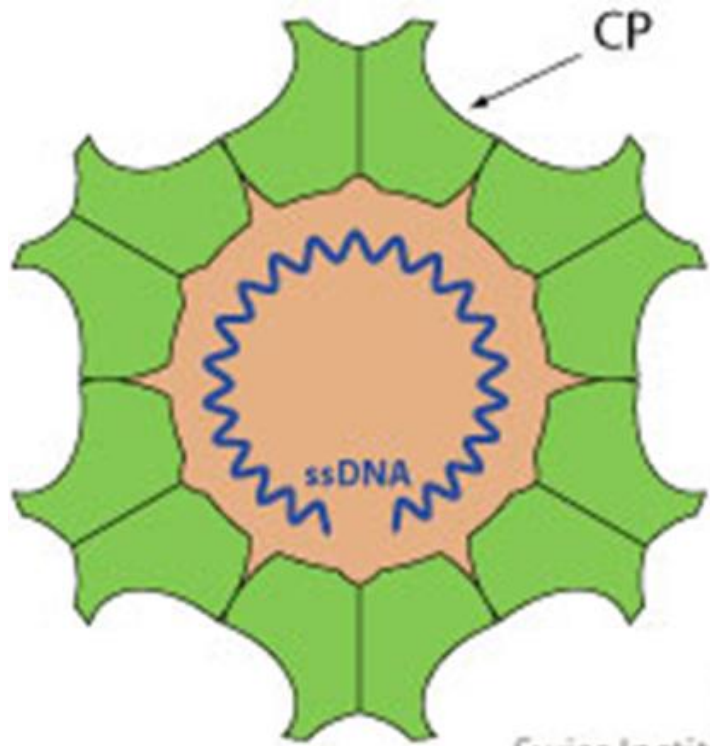
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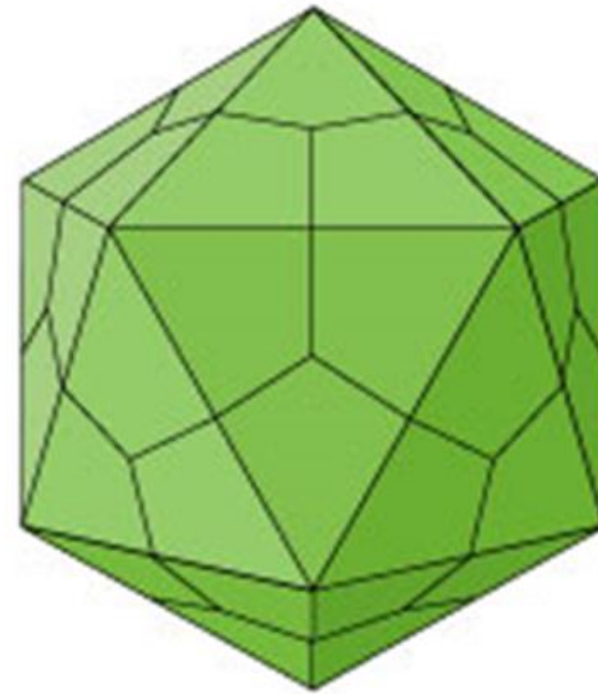
### III. Parvoviridae:

#### Structure characters:

1. Small (18-26 nm), Non Enveloped , round
2. Icosahedral symmetry , 18-26 nm in diameter, single stranded DNA.
3. Replicate in the nucleus forming intra nuclear inclusion bodies.
4. Require rapidly- dividing cells for replication.
5. Resistant to heat 56C° for more than 60 minutes also resistant to lipid solvents,pH (3-9).
6. Inactivated by formalin, Propiolacton, sodium hypochlorite.



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**Parvoviridae:-**

## **Genera of Parvoviridae:**

The canine parvovirus (CPV) is a common, acute, high morbidity and high mortality virus that mainly infects canine population, and mainly causes enteric & systemic disease in dogs & cats (Feline panleukopenia or feline infectious enteritis).

**Feline Panleukopenia (feline infectious enteritis):** - feline panleukopenia virus (FPLV) is a highly contagious, often fatal, viral disease of cats that is seen worldwide. Kittens are affected most severely. The causative parvovirus is very resistant; it can persist for 1 yr at room temperature in the environment.

Etiology:- Parvovirus

### **Symptoms and Transmission:**

- Feline Panleukopenia primarily affects kittens, but cats of any age can be infected.
- The virus attacks rapidly growing and dividing cells, such as those in the lymph nodes, bone marrow, intestines, and developing fetuses (Embryos).
- Infected cats can pass the virus in their feces, urine, nasal secretions, and body fluids.
- Susceptible cats can become infected by coming into contact with these substances, infected cats, or fleas from infected cats.
- Pregnant cats can also transmit the virus to their unborn kittens.
- Common symptoms include diarrhea, vomiting, fever, depression, loss of appetite, dehydration, and in severe cases, sudden death.

## **Diagnosis and Treatment:**

Veterinarians can suspect Feline Panleukopenia based on the cat's symptoms, vaccination history, exposure to other cats, and other factors. Bloodwork and other tests may be recommended to confirm the presence of the virus.

There is no specific treatment for Feline Panleukopenia, so care focuses on supportive measures such as fluids, nutrients, and other essential needs.

Severely ill cats require intensive care and monitoring, including intravenous fluid therapy, nutritional support, and medications to manage pain and vomiting.

The prognosis for recovery depends on various factors, including the cat's age, overall health, and the timeliness of veterinary attention

### **Prevention:**

Vaccination is crucial in preventing Feline Panleukopenia. A series of vaccinations is recommended for kittens during their first few months of life.

The FPV vaccine is usually included in a combination vaccine that also protects against other common viruses.

Cats older than 16 weeks that have never been vaccinated or have an unknown vaccination history should also receive one or two doses of the vaccine. Regular boosters are recommended to maintain protection.

In addition to vaccination, measures such as avoiding contact with infected cats, keeping cats indoors, practicing good hygiene, and disinfecting contaminated surfaces can help prevent the spread of the virus.

## IV. Papillomaviridae

### General characters:

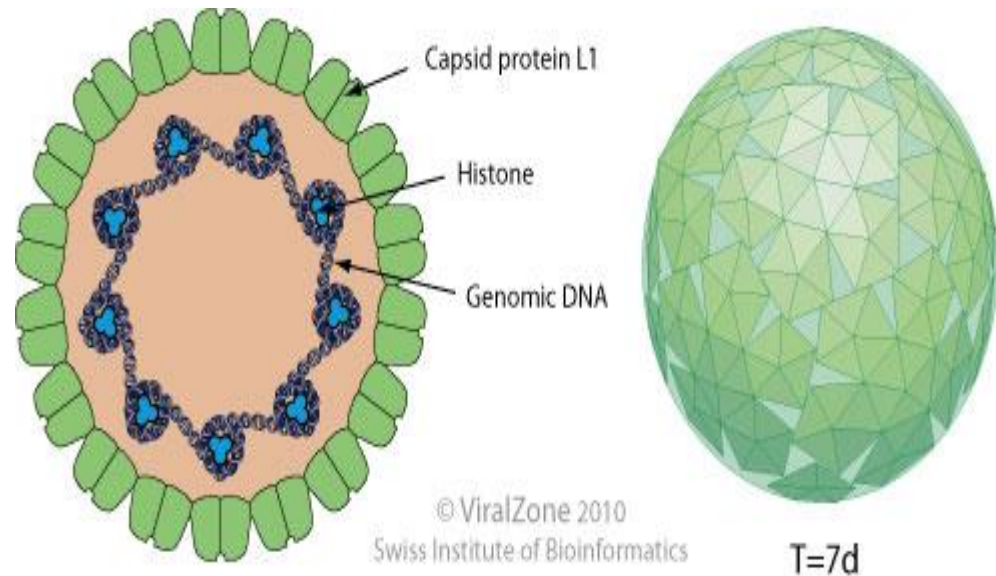
1. Non-enveloped, circular double strand DNA viruses.
2. Icosahedral symmetry, 55 to 60 nm in diameter
3. Replications in nucleus
4. Papillomaviruses can be categorized according to their tissue tropism and the lesions that they cause. The vast majority of papillomaviruses only infect keratinocytes and induce a squamous papilloma comprised of thickened folded epithelium
5. Resistant to lipid- solvents, acids, 60°C for 30 minutes.

### Genera of Papillomaviridae:

Contains one genus, Papillomavirus:

Have not been cultured in vitro.

b. Cause papilloma & fibropapilloma in domestic animals.







Infection causes warts (papillomas and fibropapillomas) of the skin

# Bovine papillomavirus (BPV)

Bovine papillomavirus (BPV) is a small circular double-stranded DNA genome virus that belongs to Papillomaviridae family, which presents tropism for epithelial and mucous tissues and they are common in cattle.

Infection causes warts (papillomas and fibropapillomas) of the skin and alimentary tract, and more rarely cancers of the alimentary tract and urinary bladder. They are also thought to cause the skin tumour equine sarcoid in horses and donkeys.

## Types of papillomavirus

There are at least five strains of papillomavirus, each of which has a specific predilection **site on the cow**.

1-BPV type I:- causes wart like lesion on the nose, teats and affect young cattle and will usually regress over time.

2-BPV type II:- causes warts all over the skin of the head and neck of young cattle and will usually regress (opposite to progress) over time.

3-BPV type III:- causes atypical warts which are smooth and white in appearance and occur mainly on the teats and udders of older cows.

4-BPV type IV causes papillomas in gut, especially the rumen, and bladder, as well as lesions on the eye. This particular systemic form can be refered to as papillomatosis. The papillomas caused by this strain can undergo malignant transformation to alimentary carcinomas,

5-BPV type V causes tiny warts on the teat





**Bovine papillomavirus (BPV)**

## Transmission:-

infection is spread by direct contact from cow to cow or by indirect contact from fomites. With most strains, calves are most commonly affected.

## Clinical Signs

In BPV type IV signs will be synchronized with the body system affected e.g. haematuria if in the bladder or diarrhoea and bloat if in the rumen.

On the skin, the virus will at first appear as small, smooth raised nodules in the characteristic regions, which will then enlarge. Some will become rough and cauliflower like in appearance (مثل القرنبيط), whilst others may become pedunculated. A characteristic feature of this disease is that the warts will regress spontaneously over a period no longer than one year.