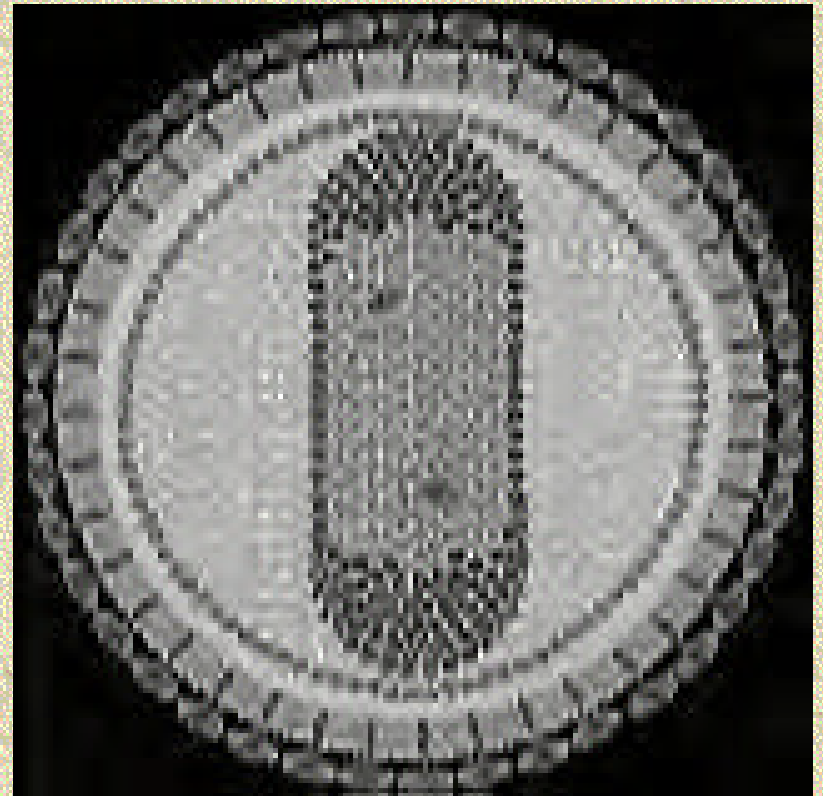


# *Equine Infectious Anemia*



# EIA

- 
- ✦ Enveloped, icosahedral
  - ✦ Family *Retroviridae*,  
Subfamily *Lentiviridae*
    - Two identical plus-stranded RNA
  - ✦ Symptoms: intermittent or continuous fever, profuse sweating, rapid breathing, depression, and weight loss
  - ✦ Infects equines



# *Mode of Infection*

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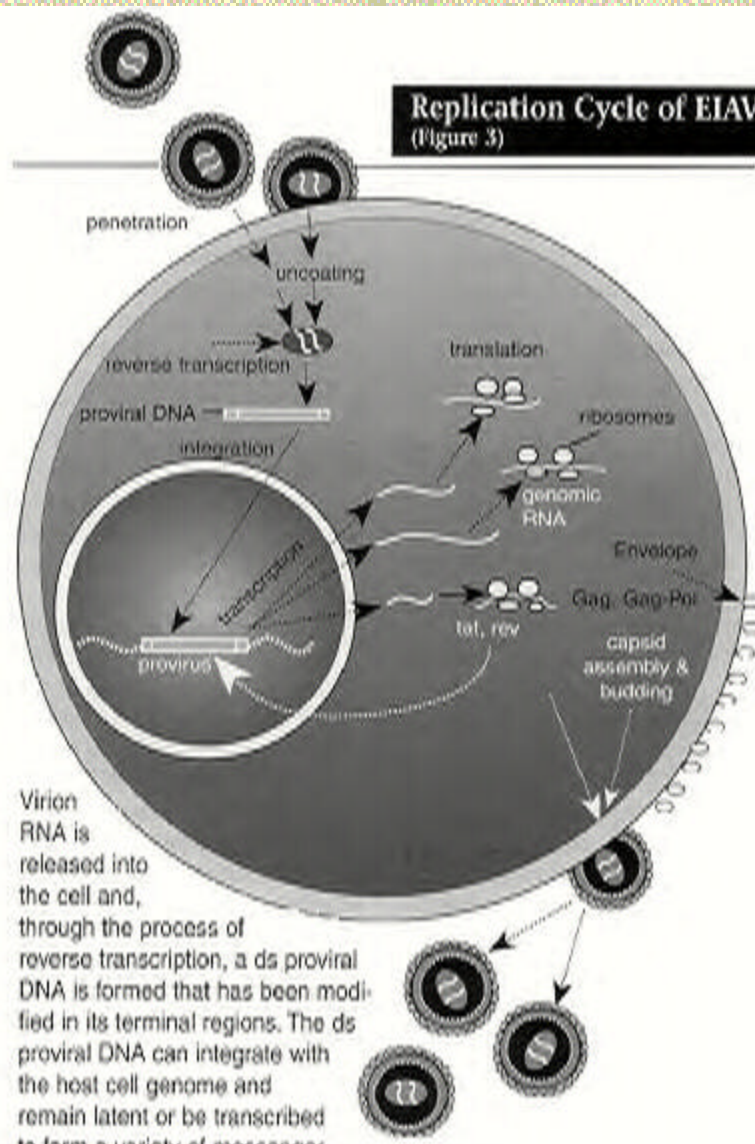
- ✦ Insect bites such as horseflies, stable flies, and deer flies
- ✦ Contaminated hoof knives, needles, and syringes
- ✦ Transplacental infection if virus levels are high enough in mother's blood—what if foal is not infected?



# *Mode of Infection*

- 
- ✦ Invades lymphocytes
  - ✦ Anemia caused by immune system attacking bone marrow—reason?
  - ✦ Death by opportunistic bacterial or viral infection
  - ✦ 30 to 70% death rate

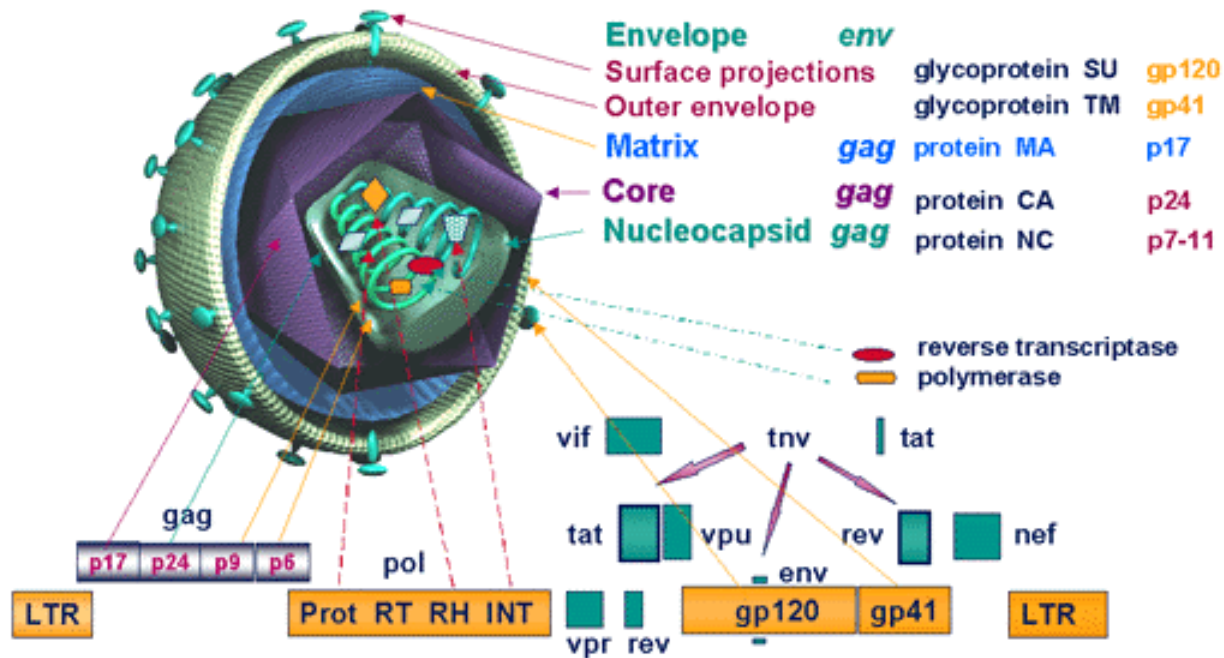
## Replication Cycle of EIAV (Figure 3)



Virion RNA is released into the cell and, through the process of reverse transcription, a ds proviral DNA is formed that has been modified in its terminal regions. The ds proviral DNA can integrate with the host cell genome and remain latent or be transcribed to form a variety of messenger RNA's that code for the regulatory and structural proteins of EIAV. Additional full-length genomic RNA's can be packaged into new virions.

# Genome map of Lentivirus

Linkage - protein, structure + function





# *Four Patterns*

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## ✦ Acute (least likely)

Animal rarely survives 10 days after virus enters the bloodstream.

## ✦ Subacute

Animal exhibits no signs of disease at first and then begins a state of weight loss, rough coat, and anemia.

# *Four Patterns*

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## ✦ Chronic

Animal develops classic symptoms that subside and may never recur. This pattern usually develops after stress.

## ✦ Carrier

Animal appears healthy but carries the disease.



# *HIV and EIA*

- ✦ EIA has many firsts:
  - Transmission by insects
  - Antigenic drift
  - Diagnostic test
- ✦ EIA was the first virus shown to be related to HIV
- ✦ EIA serves as a model for AIDS research



# *Diagnostics*

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- ✦ Coggins test detects antibodies
- ✦ No vaccine or cure
- ✦ Owners of a test-positive horse have four options:
  - Move animal  $\frac{1}{4}$  mile away from other equines
  - Move animal to an insect-free enclosure
  - Euthanasia witnessed by a veterinarian or DA official
  - Slaughter

# *Prevention*

- 
- ✦ Keep flies under control
  - ✦ “One horse, one needle”
  - ✦ Sharing of tack
  - ✦ Observe each animal’s daily habits and condition
  - ✦ Purchase only recently-tested animals
  - ✦ Only participate in shows or races that require proof of a negative test
  - ✦ Establish a routine EIA testing schedule with vet