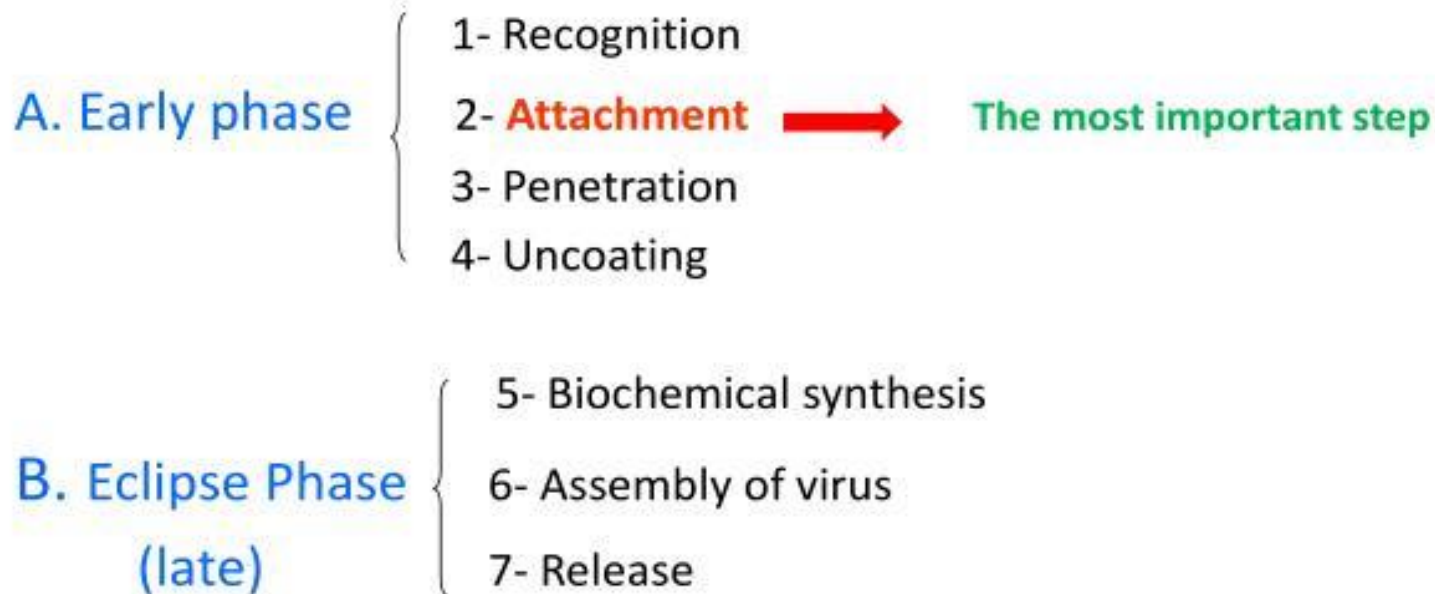


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# *Replication of viruses*

# Replication of Viruses

The ability of viruses to infect or invade the target cell and multiply inside it and subsequent escape outside the cell.



# Replication of Viruses: *the early phase*

## 1- Recognition:

The virus should recognize the cell to be able to replicate within it. Which involves interaction between virial capsid proteins and receptors (protein or polysaccharide molecules) on the host cell membrane.

## 2- Attachment (adsorption):

Attachment of the virus to the receptor on the host cell.

## 3- Penetration:

The entire virus enters the host cell. This process is temperature dependant (37C°).

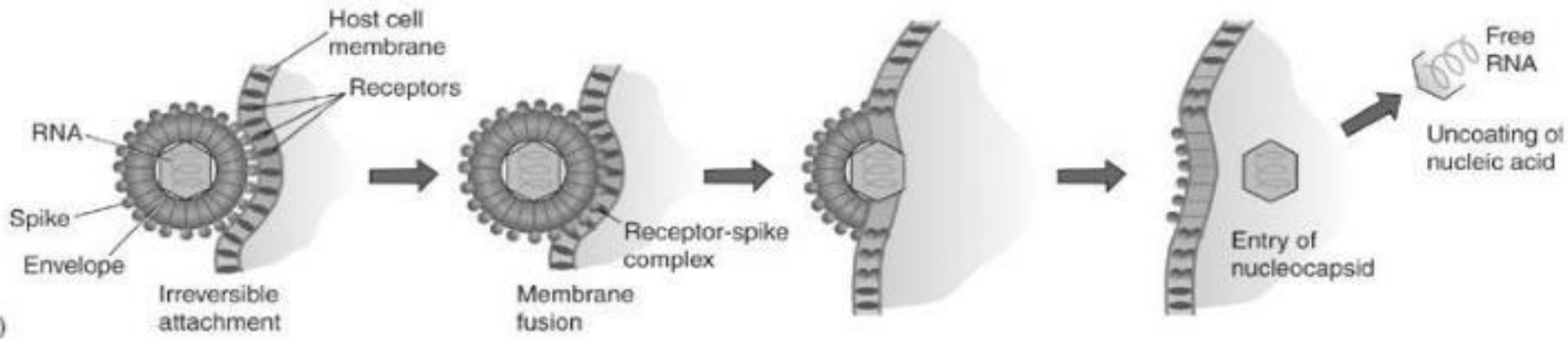
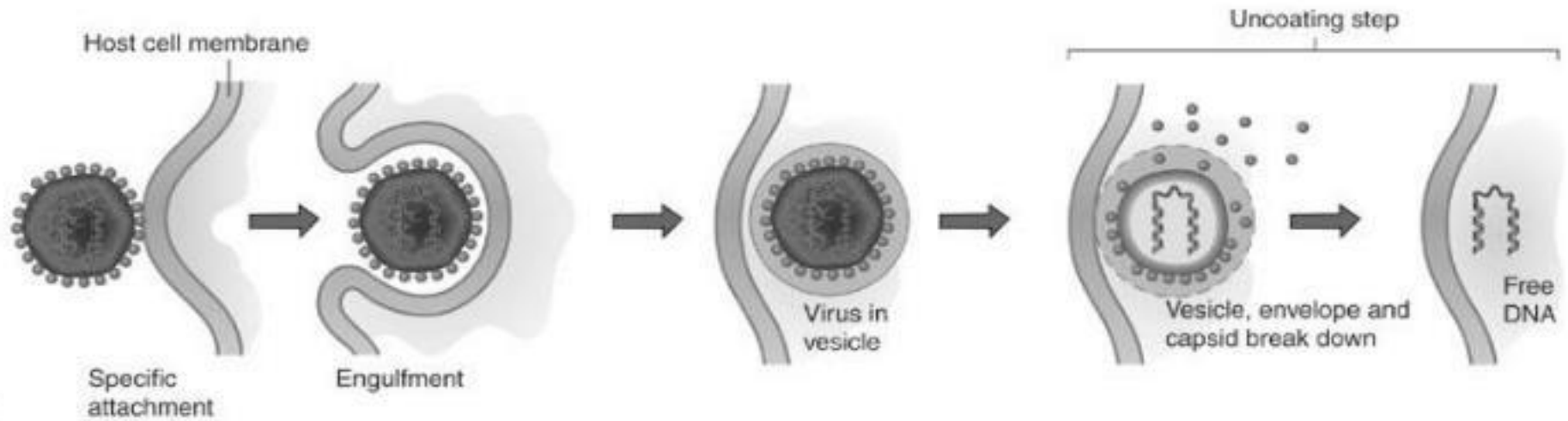
- **Naked viruses:** penetrate by endocytosis.

- **Enveloped viruses:** penetrate by fusion to plasma membrane.

## 4- Uncoating:

Removal of the coat (capsid) by the host cell proteolytic enzymes and the nucleic acid will be exposed.

# Penetration Step



# Replication of Viruses: *the Eclipse phase*

## 5- Biochemical synthesis: (formation of NA + capsid)

**A-** Early transcription followed by early translation for the production of viral mRNAs and nonstructural proteins.

**B-** Late transcription followed by late translation for the production of viral mRNAs and structural proteins.

**C-** Nucleic acid replication to produce copies of the original viral genome.

## 6- Assembly (maturation):

The viral parts are assembled to create complete virions inside the host cell.

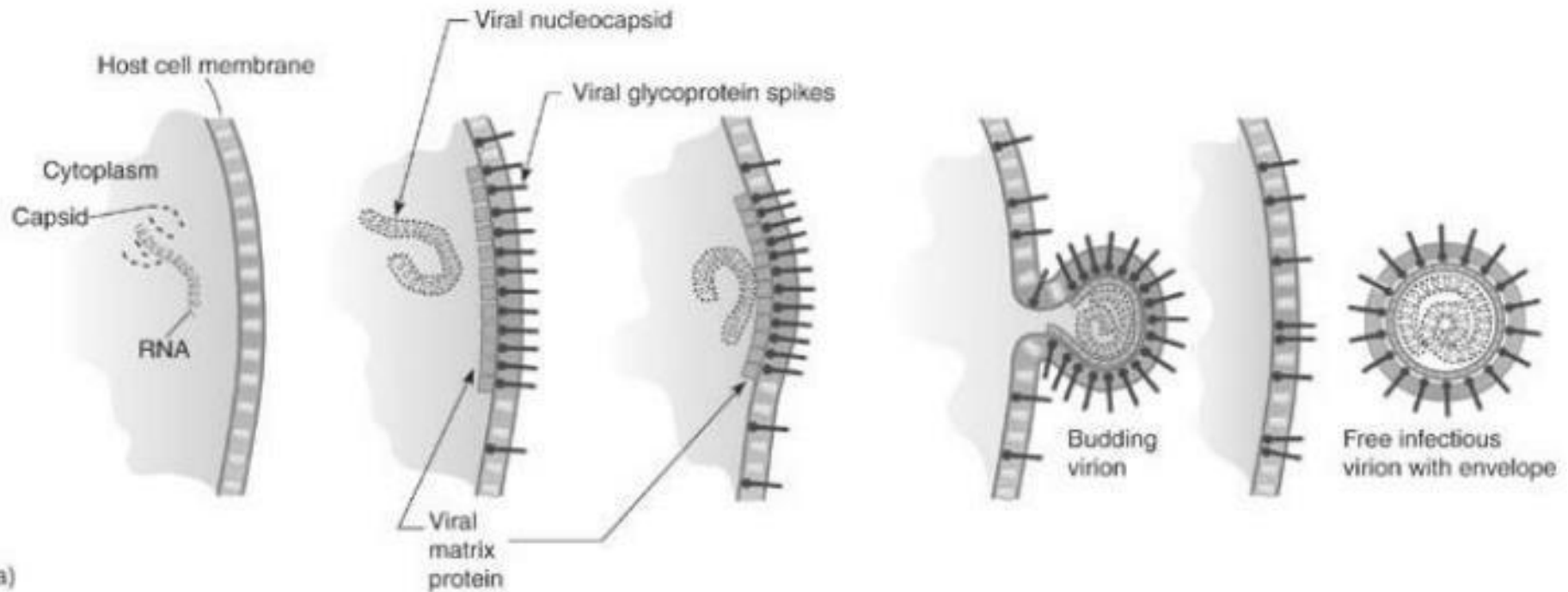
## 7- Release:

Escape of the complete virions from the host cell.

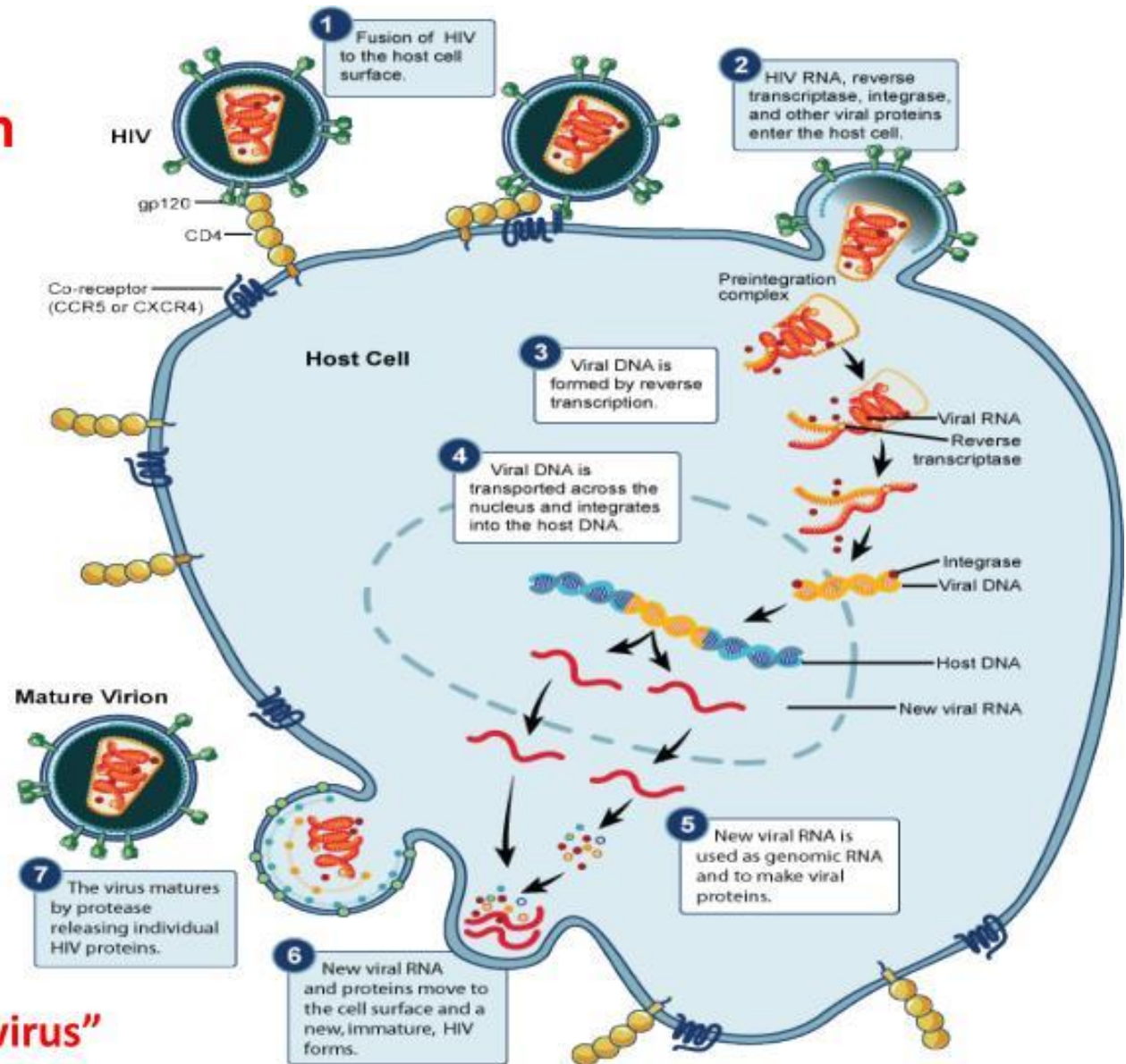
**Naked viruses** → Cell lysis (cell death).

**Enveloped viruses** → Budding.

# Release of Enveloped Virus

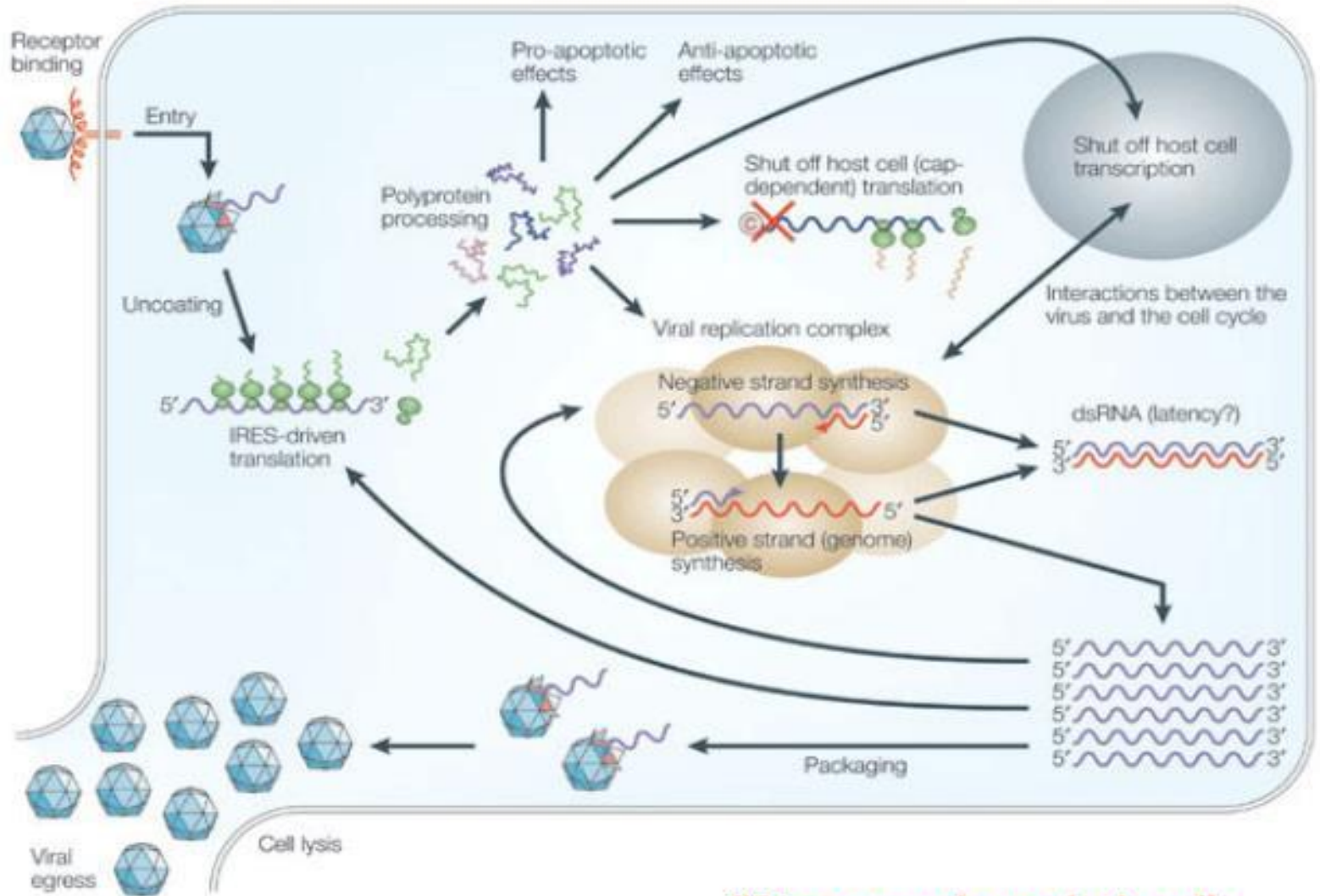


# HIV Replication Cycle



“Enveloped virus”

# Replication of Picornavirus



**“Non enveloped virus”**



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Thank you for listening

