

# 1 | Virus Infections and Lifecycle

## 1.1 | Viral Life Cycle, an Overview

1. **Attachment** => protein contact between virus and host
2. **Viral entry** => entering the cell
3. **Uncoating** => shedding the protein layer
4. **Biosynthesis** => make baby viruses
  - (a) Genome Replication: transcribe DNA/RNA
  - (b) Genome Expression: read DNA/RNA to make proteins
5. **Genome integration** => retrovirus only — put the viral gene into the genetic sequence of the actual cell
6. **Assembly** => put it all together
7. **Viral Exit** => mature virions leave

## 1.2 | Viral attachment

To be able to enter a cell, viruses have to do something to stick to it. B/c otherwise they would just be stuck in the bloodstream and be very sad.

See KBhBIO101ViralAttachment

## 1.3 | Viral Entry

In this step, the sticky virus on the surface of the cell gets into the cell. There are three different types of mechanisms by which this is achieved.

See KBhBIO101ViralEntry

## 1.4 | Uncoating

After the virus enters the cell, the lipid/protein shell on the outside must be shredded to be able to release the additional DNA inside.

See KBhBIO101ViralUncoating

## 1.5 | Viral Replication

Now, with the viruses's DNA out on full display inside the cell, how do we make another virus? There are two key questions that must be asked to answer this:

- **How are viral mRNAs produced from the viral genome?** => virus will hijack the ribosomes in the host cells. So, it is more important to ask how the mRNAs are produced to tell ribosomes what to do
- **What serves as the template for viral genome replication** => replication will need a polymerase; but the source and mechanism is dependent on viral genome structure/composition

See KBhBIO101ViralReplication

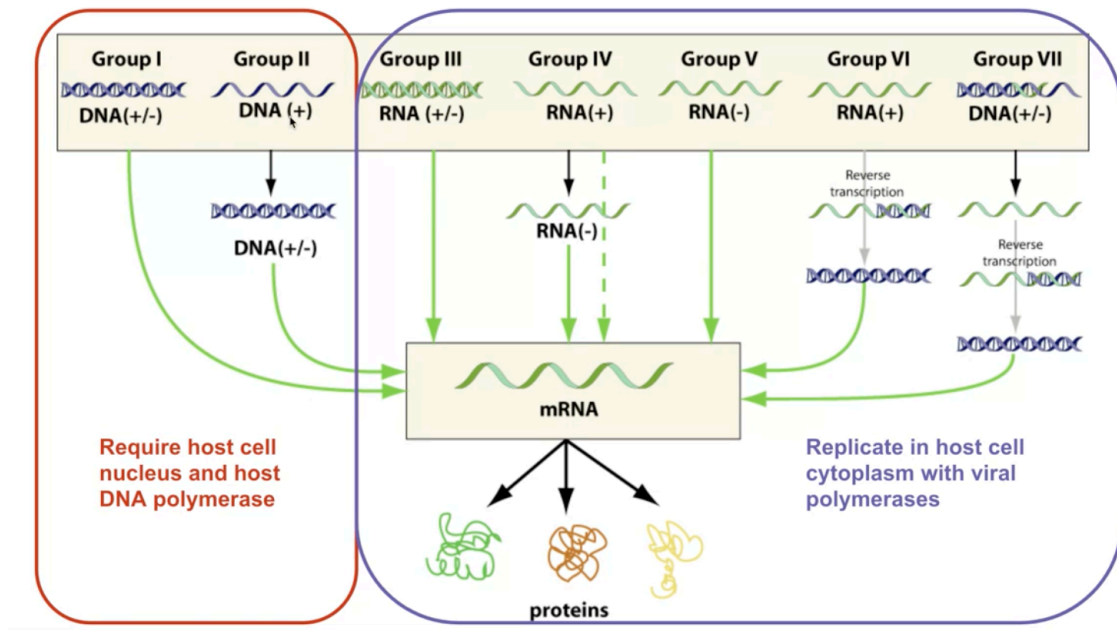


Figure 1: Screen Shot 2020-10-12 at 11.04.53 PM.png

## 1.6 | Packaging

"Viral self-assembly" — make the protein, and, without ATP, just seal the newly-formed virus DNA in.

## 1.7 | Viral Exit

This is the process by which mature virion exit the host cell. See KBhBIO101ViralExit