

The HIV Life Cycle

HIV medicines in seven drug classes stop (X) HIV at different stages in the HIV life cycle.

1 Binding (also called Attachment): HIV binds (attaches itself) to receptors on the surface of a CD4 cell. Drugs in this/these classes stop this process.

- ✗ CCR5 Antagonist (CA)
- ✗ Post-attachment inhibitors (PAI)

2 Fusion: The HIV envelope and the CD4 cell membrane fuse (join together), which allows HIV to enter the CD4 cell. Drugs in this/these classes stop this process.

- ✗ Fusion inhibitors (FI)

3 Reverse Transcription: Inside the CD4 cell, HIV releases HIV RNA (its genetic material) and uses reverse transcriptase (an HIV enzyme) to convert HIV RNA into HIV DNA (to match the cell's genetic material). The conversion of HIV RNA to HIV DNA allows HIV genes to enter the CD4 cell nucleus and be combined with the cell's own genetic material. Drugs in this/these classes stop this process.

- ✗ Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
- ✗ Nucleoside reverse transcriptase inhibitors (NRTIs)

7 Budding: Newly formed immature (noninfectious) HIV pushes itself out of the host CD4 cell. The new HIV releases protease (an HIV enzyme). Protease breaks up the protein chains of the immature virus into smaller functional pieces, creating the mature (infectious) virus. Drugs in this/these classes stop this process.

- ✗ Protease inhibitors (PIs)



6 Assembly: New HIV proteins and HIV RNA move to the surface of the cell and assemble into immature (noninfectious) HIV.

4 Integration: Inside the CD4 cell nucleus, HIV releases integrase (an HIV enzyme). HIV uses integrase to insert (integrate) its viral DNA into the DNA of the CD4 cell. Drugs in this/these classes stop this process.

- ✗ Integrase inhibitors (INSTI)

5 Replication: Once HIV's genetic material is integrated into the genetic material of the CD4 cell, HIV begins to use the machinery of the cell itself to build long chains of HIV proteins. These protein chains are the building blocks for more HIV.