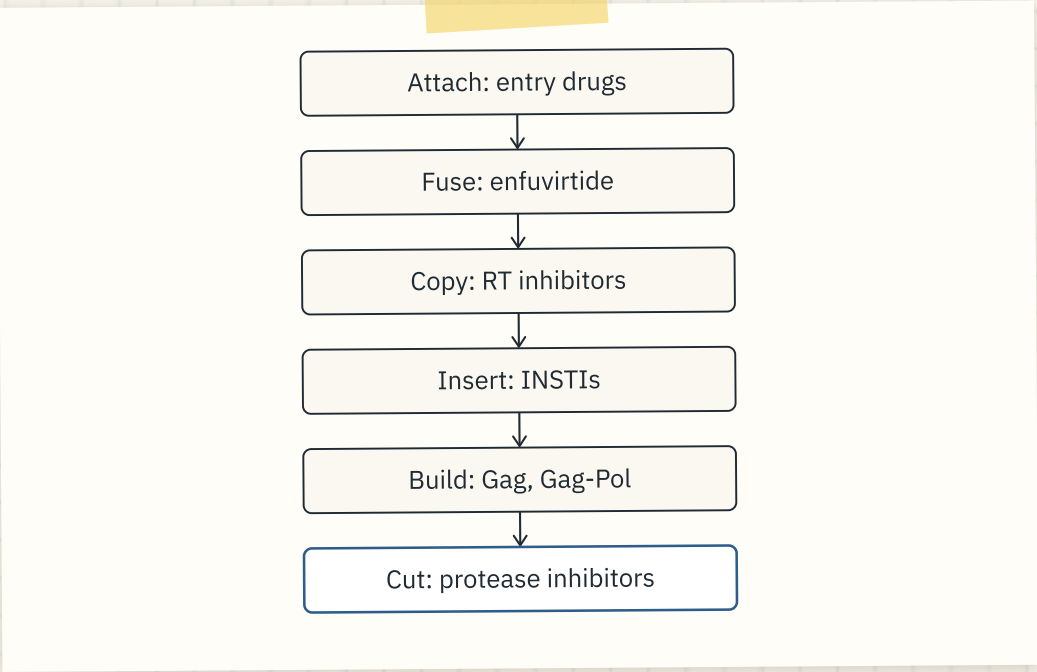
HIV life cycle and drug targets

Attach, fuse, copy, insert, build, cut



Step by step

1. Attach: gp120 binds CD4, then the CCR5 coreceptor.
2. Fuse: gp41 pulls the viral envelope and the cell membrane together.
3. Copy: reverse transcriptase copies the RNA genome into DNA.
4. Insert: integrase puts the viral DNA into a host chromosome as the provirus.
5. Build, then cut: Gag and Gag-Pol bud out, and protease cuts them into working proteins.

Step	Drug class
Attach (gp120, CD4, then CCR5)	Fostemsavir (gp120); ibalizumab (after attachment); maraviroc (CCR5)
Fuse (gp41)	Enfuvirtide (injected)
Copy (reverse transcriptase)	Nucleoside / nucleotide analogues; non-nucleoside inhibitors
Insert (integrase)	Integrase strand transfer inhibitors (-tegravir)
Build (Gag, Gag-Pol)	No dedicated class; capsid inhibitors (lenacapavir) act here and at other stages
Cut (protease)	Protease inhibitors (-navir)

Step and drug class

Remember

Attach, fuse, copy, insert, build, cut

Provirus is permanent, so treatment is lifelong

Drugs from different classes are combined

Exam traps

- Attachment and coreceptor binding are separate steps.
- Nucleoside and nucleotide analogues terminate the chain; non-nucleoside inhibitors bind the enzyme.
- Ritonavir boosts other protease inhibitors by inhibiting CYP3A4.
- Maraviroc works only against virus that uses CCR5.

HIV life cycle and drug targets, step by step

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/microbiology/hiv-life-cycle-and-drug-targets

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
© 2026 Medservatory, a project of ADMR Solutions Ltd. Free to print and share for personal study.