Future Hits

Researchers are targeting 10 steps in HIV's M.O. to give us new treatments

May 1, 2004 By Ivan Oransky, MD

---

1. Slimy Surface
HIV needs to be covered in fat to make its grand entrance into cells. Researchers are trying to keep the virus out by disrupting this surface fat with creams.

2. Entry
To enter your cells, HIV's protein spikes attach toa molecule on the cell's surface, bind to another and then fuse with your cell membrane. Entry Inhibitors to block each step are near (one, Fuzeon, is here).

3. Capsid
Inside your cells, HIV has to shed a protein coat (*capsid*) encasing its genetic material. In February, scientists discovered a protein (TRIM5-alpha) that blocks the shedding—in monkeys.

4. Reverse Transcriptase (RT)
Enzyme RT makes HIV's genetic material—coded as RNA—more like your cell's genetic material, coded as DNA. Blocking that step is central to stopping HIV's life cycle—that's why all those nukes and non-nukes target RT. Simpler, more effective RT-inhibiting meds are on the way.

5. Integrase
To reproduce, HIV has to get its genes into your cell's genes. The enzyme *integrase* does the trick. A few integrase inhibitors have hit HIV in the lab, but none has yet been shown to work in humans.

6. Protease
Once entwined with your cell's genes, the virus can trick the cell into making the proteins to build new HIV. But those need some postproduction work—enter the enzyme *protease*. We've got eight protease inhibitors (PIs), with more in store.

7. Virus Formation
Next, HIV's proteins have to get together and form a virus. One treatment in the works may be able to muck up this step.

8. Viral Infectivity Factor (Vif)
Vif, a protein HIV needs late in the process of viral formation, disrupts an enzyme in your own cells

(APOBEC3G) that would normally block infection. Researchers' challenge: Stop Vif from getting to APOCEC3G.

9. Immune System's Cells

The body's own cells are able to fight bacteria and viruses—including HIV. Stimulating these cells' growth hasn't worked very well so far, because it can give HIV more cells to infect. But with kinks removed, this could bolster current treatments.

10. Complacency

One stage of the HIV life cycle may be in the brain: thinking HIV isn't a personal and global danger. We need to fight the idea that HIV's peril is a thing of the past.

© 2026 Smart + Strong All Rights Reserved.
http://beta.docker.poz.com/article/Future-Hits-303-6985