A Newfound Way HIV Hijacks Human Cells Could Be a Drug Target

The virus snatches a molecule from human cells that strengthens the shell around its genetic code during the infection process.

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Scientists have found yet another means by which HIV hijacks human cells to shield itself against the body's defenses, thus revealing a potential new target for antiretroviral (ARV) treatment.

Publishing their findings in a pair of papers in eLife, researchers engineered HIV to have fluorescent tags that would allow it to be monitored using a technique called fluorescence microscopy.

HIV shields its genetic material, in the form of RNA, with a shell known as a capsid. This shell protects the virus's genes from attack by the body's natural defenses as HIV infects an immune cell and ultimately translates its RNA into cellular DNA. Scientists have long been puzzled by the dichotomy of the capsid's function: It must be strong enough to protect the viral RNA but flexible enough to release that material when it comes time for it to integrate into the immune cell and complete the process of infection.

The study authors discovered that HIV makes use of a small molecule known as inositol hexakisphosphate from the cells it infects. This molecule strengthens the capsid and thus stabilizes the viral RNA for about 10 to 20 hours during the infection process, which itself takes hours.

A new form of HIV treatment could target the capsid, as opposed to the enzyme targets that are a focus of all approved ARVs. Capsid-focused treatment could have reduced toxicities compared with the current crop of treatments.

To read a press release about the study, click here.

To read the study abstracts, click here and here.

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