

# Study observes potential breakthrough in treatment of HIV

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HIV infecting a human cell. Credit: NIH

A new study conducted by researchers at the San Francisco VA Medical

Center (SFVAMC) observes that pharmacological enhancement of the immune systems of HIV patients could help eliminate infected cells, providing an important step in the ongoing quest to find a lasting HIV cure.

The study, titled "Stimulating the RIG-I Pathway to Kill Cells in the Latent HIV Reservoir Following Viral Reactivation," addresses the persistence of latent HIV reservoirs in patients who are on [antiretroviral therapy](#). Latent HIV reservoirs are established during the earliest stage of HIV infection, and they are infected with HIV even though they are not actively producing the virus. Although antiretroviral therapy can reduce the level of HIV in the blood to an undetectable level, latent reservoirs of HIV continue to survive. When a latently infected cell is reactivated, the cell begins to produce HIV again. For this reason, antiretroviral therapy cannot cure HIV infection.

According to the study, HIV latency depends on [immune system](#) suppression, including immune system responses that detect viral pathogens and induce the destruction of infected cells. The study shows that retinoic acid can stimulate the innate immune system into eliminating HIV-infected cells. In particular, acitretin, an FDA-approved retinoic acid derivative, can increase HIV transcription in the latent HIV reservoir and allow the innate immune system to target and destroy HIV infected cells.

"The current model of HIV treatment can help manage symptoms and increase the quality of life for patients, but it is not a cure," says the study's lead author Peilin Li, MD, MHS, Research Associate at SFVAMC, and an Assistant Adjunct Professor at the University of California, San Francisco School of Medicine. "HIV patients on antiretroviral medications must take them for the rest of their lives, and they often experience adverse side effects."

"It is important to strengthen the body's defense system against the virus. This will help the antiretroviral drugs do their job," says Dr. Li. "We want the immune system to recognize and kill the virus. By boosting immune response, the body will be able to kill cells in the latent HIV reservoir that are still capable of producing HIV."

Dr. Li is hopeful that the study's findings will lead to new ways of thinking about treating HIV. "I think this can open new doors to fighting HIV. With further research, we can create clinical solutions that can boost immune system functioning and find a lasting cure for this disease. This is a patient-centered approach to HIV treatment that moves beyond treating symptoms and toward whole health."

**More information:** Peilin Li et al. Stimulating the RIG-I pathway to kill cells in the latent HIV reservoir following viral reactivation, *Nature Medicine* (2016). [DOI: 10.1038/nm.4124](https://doi.org/10.1038/nm.4124)

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