Failure to Awaken Dormant Cells Deals Blow to HIV Cure Research

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A laboratory at Johns Hopkins University has failed in its recent quest to find a drug that can reverse the latent state of HIV-infected immune cells that are a component of the viral reservoir. Publishing their disappointing results in Nature Medicine, researchers drew white blood cells from people with HIV and tested drugs known as HDAC inhibitors on latently infected cells.

“Despite our high hopes, none of the compounds we tested in HIV-infected cells taken directly from patients activated the latent virus,” Robert F. Siliciano, MD, PhD, a professor of medicine at the Johns Hopkins University School of Medicine and the study’s senior author, said in a release.

The study’s findings call into question whether it will be possible to flush HIV out of dormant cells with a latency-reversing agent. HIV can remain in these cells because the cells do not replicate at a level that produces certain proteins that would alert the immune system to their presence. Nor can antiretroviral (ARV) treatment attack a cell that is dormant. Thus, the virus can remain there untouched and can replenish the viral population in the event that ARV treatment is stopped. A possible route to a cure with HIV, in theory, would involve flushing HIV out of all these cells.

The study did yield advancements in scientific knowledge nevertheless. The researchers were able to develop more sensitive tests to detect reactivation of HIV. They also determined that the HDAC inhibitors studied increased viral RNA production mostly by a one- to two-fold rate, with one drug upping the viral production six- to 10-fold. Considering that a virus-producing cell would have about a 100-fold increase in viral RNA production, the researchers now intend to study combinations of the HDAC inhibitors in hopes that together they might raise the rates of increased viral RNA production.

To read the press release, click here.

To read the study abstract, click here.

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