Existing drugs may limit damage caused by HIV

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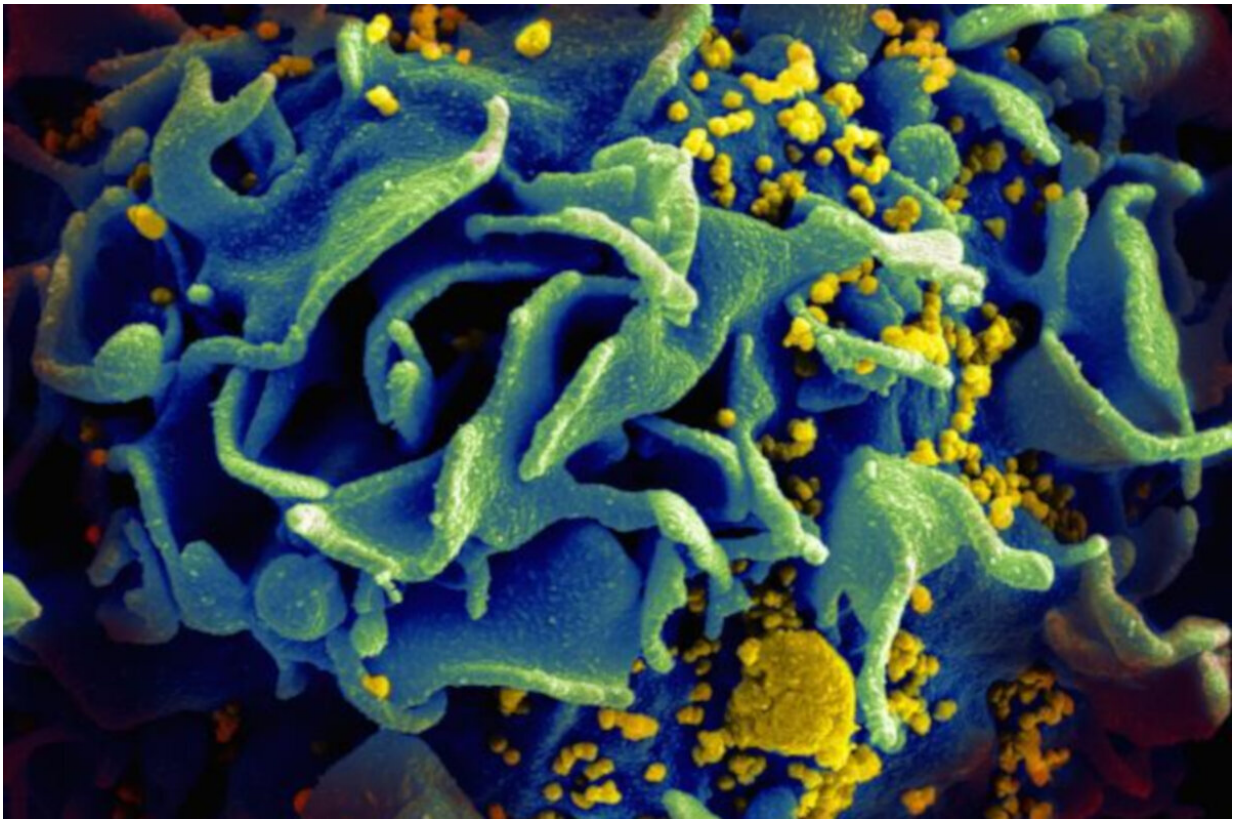

Microscopic image of an HIV-infected T cell. Credit: NIAID

Yale researchers have identified four drugs that may help minimize the long-term health effects of HIV infection, they report June 23 in the *Journal of Clinical Investigation*.

Antiretroviral therapy has proved to be a life-saving treatment for those infected with HIV. Yet even after treatment, most patients still harbor latent HIV in some immune system cells. The presence of inactive HIV in the genome can trigger chronic immune system activation, cause accelerated aging, and make patients more susceptible to cardiovascular problems and some forms of cancer.

"It's like diabetes. There are good treatments available but people still suffer adverse health consequences," said Yale's Ya-Chi Ho, assistant professor of microbial pathogenesis and medicine (infectious diseases) and senior author of the study. "Antiretroviral therapy alone is not sufficient to inhibit chronic immune system activation, and new drugs should be developed."

Ho's team looked for drugs that might help inhibit reactivation of HIV and reduce damaging immune system responses. The researchers screened 1,430 drugs approved by the U.S. Food and Drug Administration to assess their impact on human cells infected by HIV. They eventually zeroed in on four approved drugs that showed the most promise to both suppress activation of latent HIV and reduce damaging immune system response.

Two of the four drugs—ruxolitinib, used in hematological disorders, and mycophenolic acid, used to inhibit organ transplant rejections—were already in clinical trials to treat HIV infections. However, the researchers also found that filgotinib, which modulates immune response and is used to treat autoimmune diseases, and spironolactone, a hormone used to treat heart failure, also inhibited HIV reactivation and HIV-induced immune activation.Ho said that these HIV-suppressing drugs might be used as a complement to antiretroviral therapy in the treatment of HIV infection to reduce chronic immune activation, which cannot be achieved by antiretroviral therapy alone.

Yale's Yang-Hui Jimmy Yeh is the lead author of the study, which was primarily funded by the National Institutes of Health and a Yale Top Scholar award.

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