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Antibody therapy controls HIV for months in new clinical trial

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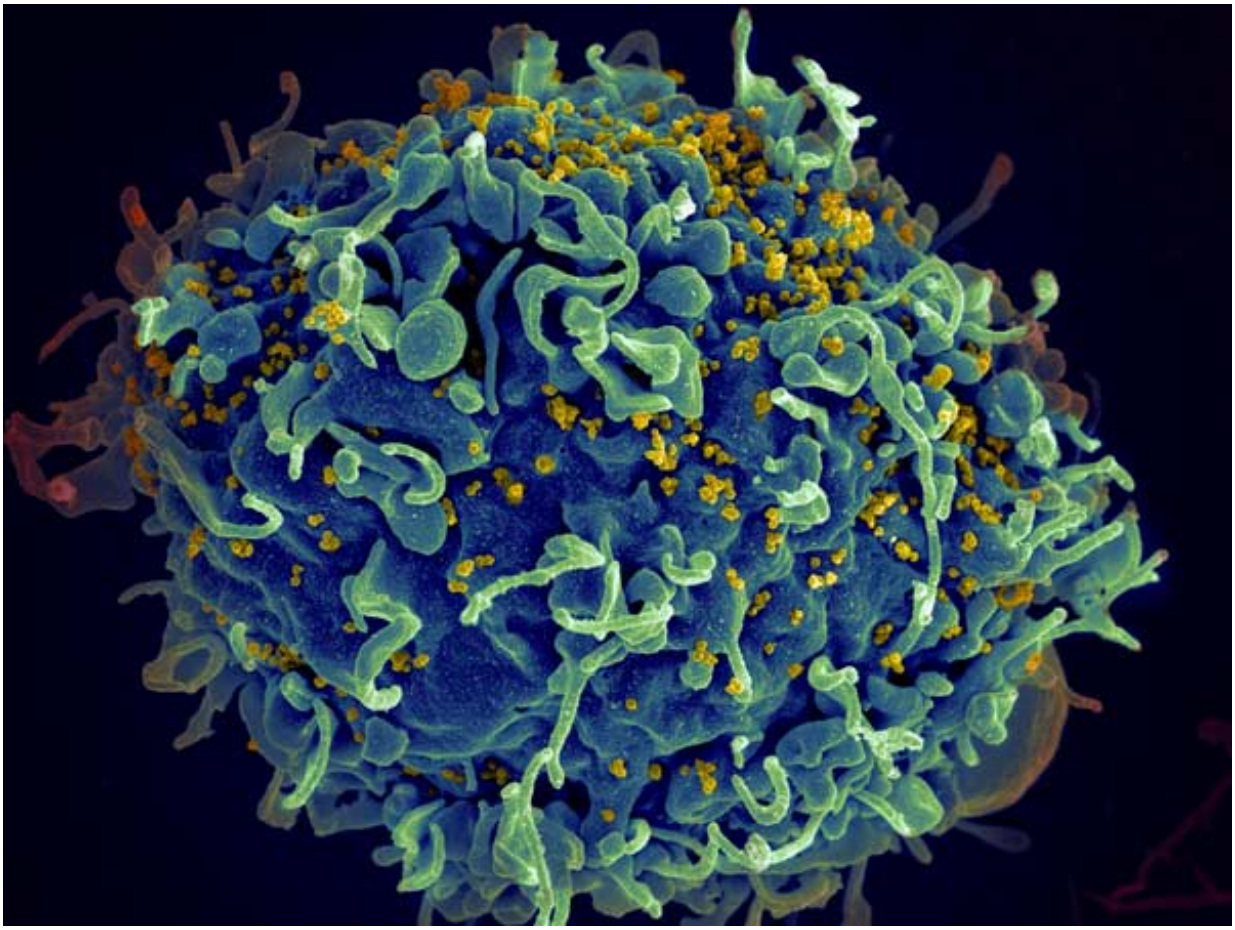

HIV infecting a human cell. Credit: NIH

Antiretroviral therapy has made HIV a manageable condition, but it does

not eliminate the virus from the body—and most regimens are expensive and require a pill every day, for the rest of the patient's life.

Now, findings from a clinical trial led by Rockefeller University scientists highlight anti-HIV antibodies as a novel treatment option; one that wouldn't rely on vigilant daily dosing and could potentially reduce the body's reservoir of HIV, which conventional antiretroviral drugs cannot do.

The findings, published in *Nature*, suggest that the antibody treatment could be used in combination with long-acting antiretrovirals, or alone after such medications have sufficiently brought down viral levels. "The idea is that you would still be on HIV treatment, but instead of having to take a pill every day, with the long-acting versions of the antibodies, patients would be able to take infusions every six months," says Marina Caskey, a professor of clinical investigation at Rockefeller, who co-led the study with Michel C. Nussenzweig, the Zanvil A. Cohn and Ralph M. Steinman professor and head of Laboratory of Molecular Immunology.

In the phase 1b trial, 18 participants received seven infusions of a pair of broadly neutralizing antibodies over five months, while discontinuing their antiretroviral medications. Thirteen of these participants maintained viral suppression for at least five months, and in a few cases over a year, suggesting the antibodies are able to control viruses that are sensitive to the antibodies and prevent viral levels from rising to dangerous levels.

Besides suppressing the virus, antibody therapy may also have an effect on cells infected with HIV that cannot be eliminated by antiretroviral drugs. "Ultimately, with any treatment, we'd like to see a decline in the reservoir of infected T cells, which fuel rebound when therapy is discontinued," says Christian Gaebler, an assistant professor of clinical investigation in Nussenzweig's lab and the study's first author. After

therapy, the team detected a decrease in the infected T cells, specifically those that harbor intact viruses capable of replication. "It's a promising finding that we hope to follow up on in future, larger studies," Gaebler says.

The new study expands on a previous, shorter trial in which participants had received three infusions of the antibodies over the course of six weeks. The researchers found that administering additional infusions was generally safe and well-tolerated, and the longer treatment period did not result in the emergence of new resistant variants.

More information: Christian Gaebler et al, Prolonged viral suppression with anti-HIV-1 antibody therapy, *Nature* (2022). DOI: 10.1038/s41586-022-04597-1

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