Researchers discuss challenges, successes of HIV cure research in science

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David Margolis, MD, Professor of Medicine at the University of North Carolina School of Medicine and Principal Investigator of CARE. Credit: UNC School of Medicine

A better understanding of HIV latency is the key to eradicating the virus

researchers at the University of North Carolina and partner institutions write in a perspective in the journal *Science*. Worldwide, 37 million people are living with HIV. A cure has proved elusive due to viral latency - a period when the virus remains alive, but dormant in body thereby eluding the immune system.

Based at UNC, the National Institutes of Health-funded Collaboratory of AIDS Researchers for Eradication (CARE) seeks to validate and implement their "kick and kill" strategy to cure HIV infection. This approach involves waking up the latent or sleeping virus in the body, and at the same time boost the immune system to recognize and clear the virus. In the Science perspective, the researchers discuss the gains they have made in understanding latency over the past five years and the challenges that remain as the team of academic and industry investigators—from UNC, Duke University, Merck, GlaxoSmithKline, the University of California at San Diego, Emory University, MacroGenics, and other institutions - embark on the next steps in HIV cure research.

"We have learned a lot, and made advances, and we hope that we now have the tools to begin to chip away at the persistent virus that remains in patients, and requires them to maintain lifelong antiviral drug therapy," said David Margolis, MD, Professor of Medicine at UNC and Principal Investigator of CARE.

The team has made tremendous strides in learning about latency reversing agents or LRAs. Four clinical studies have revealed that histone deacetylase (HDAC) inhibitors are the most effective LRA for inducing cell-associated HIV-1 RNA. The investigators have also studied cells from people living with HIV and found that serial dosing of LRAs is needed to reverse latency.

Questions the group hopes to answer over the next five years include if

LRAs will promote the expression of viral protein on the surface of infected cells, and if pairing LRAs with immune interventions will lead to the clearance of persistent, latent infection.

More information: Latency reversal and viral clearance to cure HIV-1, *Science* 22 Jul 2016: Vol. 353, Issue 6297, DOI: 10.1126/science.aaf6517

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