

# “We Know It’s Possible”: The Future of HIV Cure Research

amfAR VP of Research Dr. Andrea Gramatica discusses progress toward a cure for HIV: where we stand now and how we’re going to get there.

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Since 1985, amfAR has been committed to an end to AIDS. In the more than 40 years since our founding, amfAR has awarded more than 3,900 grants to researchers worldwide, greatly expanding our understanding not just of how the virus infects human cells, but how to prevent that from happening, how to control the virus, and how to keep people living with HIV healthy.

The scientific community has managed to cure a handful of people of HIV. While those unique cases aren’t replicable for the more than 40 million people living with HIV, they do prove what was once only theoretical: it is possible to cure HIV. In the interview that follows, Dr. Andrea Gramatica, amfAR’s VP of Research, discusses where we stand now and how we’re going to get to the eventual goal.



## How close are we to a scalable cure for HIV?

We understand the problem much better now than we did even a decade ago. We know we need to identify where HIV persists in the body, measure the HIV reservoir—latent virus antiretrovirals can’t target—accurately, and either eliminate those infected cells or keep them permanently controlled without daily treatment.

We are no longer asking whether it is biologically imaginable; I can’t say a cure is right around the

corner, but we know it's possible. Now we're studying how to connect the right technologies in the right way, safely and at scale.

What does it actually mean to cure HIV?

When we talk about curing HIV, we usually mean one of two things. One is an eradication cure, where HIV is completely removed from the body. The other is a functional cure, where the virus may still be present at very low level, but the immune system keeps it controlled without daily medication. For most people in the field, a functional cure would already be a major breakthrough, allowing someone to stop antiretroviral treatment and remain healthy, with the virus suppressed and not spreading or progressing.

In a world with effective treatments and prevention, why does curing HIV remain an important priority?

HIV treatment today is one of the great success stories of modern medicine. And amfAR-funded research has played a major role in getting us where we are. People who have access to treatment and take it consistently can live long, healthy lives, and when the virus is undetectable, it is not sexually transmitted.

But here are our problems: treatment still means lifelong medication, lifelong medical access, and lifelong monitoring, and this is still a huge global challenge when more than 40 million people are living with HIV and the majority of these people live in regions of the world with little to no access to basic medical care.

What are some promising recent developments in the pursuit of a cure for HIV?

The COVID-19 vaccines gave us powerful proof of concept for [mRNA and lipid nanoparticle technologies](#). That does not mean the same approach automatically cures HIV, but it showed how quickly we can design and deliver new biological instructions to the body.

Also, gene and cell therapies have advanced dramatically, especially in cancer. Tools like engineered immune cells and gene editing are giving researchers new ways to think about reaching infected cells or making the immune system more resistant to HIV.

And lastly, I'd note that [artificial intelligence may help us make better use of more than 40 years of HIV research](#). AI will not replace scientists, but it can help identify patterns, connections, and therapeutic opportunities that would otherwise be very difficult to see.

Why are researchers looking into the immune system as a part of curing HIV?

Because HIV infects cells of the immune system and it reshapes the immune system at large, weakening it, and, if the virus is uncontrolled, eventually destroying it. Antiretroviral therapy can stop the virus from spreading from one cell to another, but it does not remove the cells that already have HIV.

Our immune system does have, in theory, the ability to eliminate HIV-infected cells, but it does not do so because HIV weakens its functionalities. So, the question is: can we help the immune system recognize and eliminate HIV-infected cells, and keep the virus controlled without lifelong treatment? That is why researchers, in some cases [supported by amfAR](#), are studying T cells, antibodies, immune exhaustion, vaccines, and engineered immune approaches.

amfAR is a leading nonprofit dedicated to advancing scientific discovery and transforming global health with a primary and enduring commitment to ending the HIV/ AIDS epidemic. Serving as a catalyst for breakthrough science, amfAR supports innovative research in areas where viruses and the immune system play a defining role, including cancer, neurological conditions, autoimmune disorders, and other viral diseases. Through strategic investments, global research partnerships, and evidence-based policy leadership, amfAR helps accelerate discoveries that improve health and save lives. Since 1985, amfAR has raised more than \$950 million and awarded in excess of 3,900 grants to scientists worldwide. Learn more at [www.amfar.org](http://www.amfar.org).

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