

Finding a way to kill the HIV virus

US scientists successfully eliminate HIV virus in live animals, marking a very important step in finding a complete cure for HIV-infected people.

"HIV - the human immunodeficiency syndrome" is one of the diseases that medicine currently cannot cure. But recently, American scientists successfully eliminated HIV virus in live animals, marking a very important step in finding a complete cure for HIV-infected people.

1. Finding a way to detect HIV-infected T cells is "hibernating", opening up hope for the root
2. New research: Testing HIV by USB

In a new study published, scientists at Lewis Katz Medical School (LKSOM) at Temple University and the University of Pittsburgh (USA) have used **CRISPR gene editing technology** to completely eliminate HIV DNA. from human cells transplanted into mice, even preventing the spread of the virus. Scientists used mice transplanted with human immune cells (T cells) and infected with the HIV-1 virus to do the experiment.

Dr. Wenhui Hu at LKSOM, the project leader, said they were able to remove HIV-1 from the genome in tissues and completely eliminate the virus only one year later.



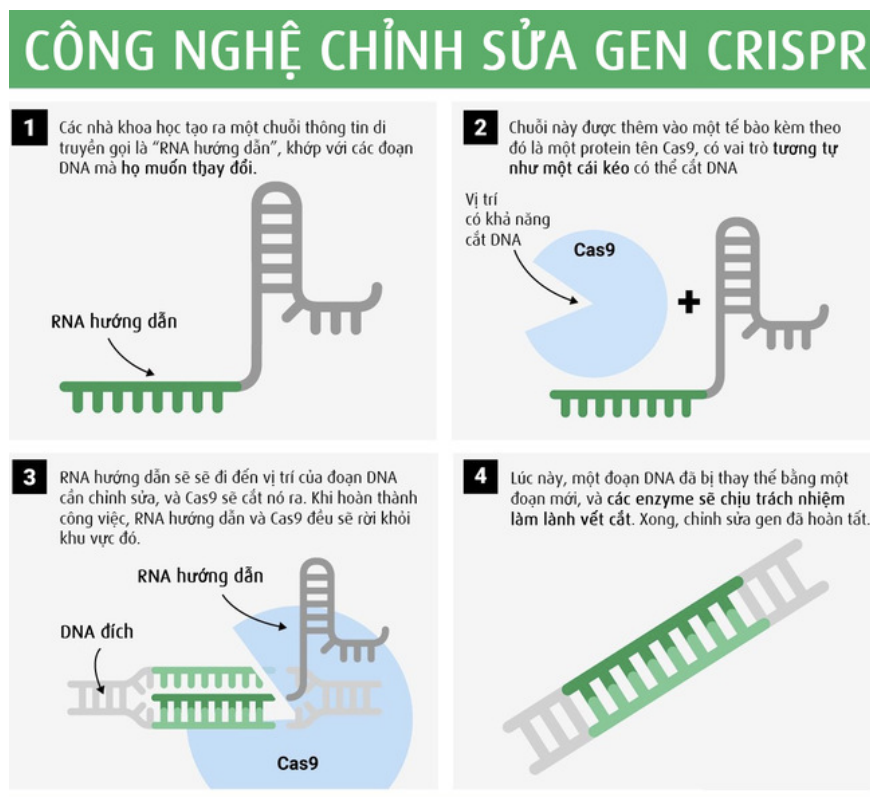
This research has brought hope to cure the disease of the century.(Photo: Shutterstock / vchal.)

The team conducted experiments on three groups of mice:

1. The first group was mice infected with HIV-1.
2. The second group is injected into the EcoHIV virus, a species of virus similar to human HIV-1 but more dangerous.
3. The third group is mice that are injected with cells in HIV-1-infected mice and human immune cells.

With the first group, the scientists managed the gene while blocking the ability of HIV-1 to work and reducing the expression of RNA by viral genes by up to 95% compared to previous studies.

In the second group, the EcoHIV virus is easily spread, multiplying rapidly. During an acute infection, the HIV virus will actively regenerate. For mice infected with EcoHIV, when scientists used **CRISPR / Cas9 gene editing technology**, 96% of the mice's viruses were removed, successfully preventing replication and spread of the EcoHIV virus. This demonstrates the ability of the HIV-1 virus to be removed by the CRISPR / Cas9 system.



With the third group after only one treatment with CRISPR / Cas9, latent virus in the tissues and organs of mice was completely removed.

This is the first time scientists have succeeded in completely eliminating the HIV virus in living animals and in the future they will conduct experiments on primates and eventually human clinical trials.

What is CRISPR-Cas9 gene editing technology?

CRISPR-Cas9 is a popular genetic modification method. A protein called Cas9 derived from bacteria is used as a tool to make precise changes to the genomes of living cells.

CRISPR-Cas9 has a blade-like function to cut DNA while the rest is RNA that puts a scalpel to the right nucleotide (structural unit of DNA) for cutting. As a result, scientists can inject artificial genes to specific regions of DNA and cut them accurately. CRISPR has been used to "neutralize" genes and remove small fragments of broken DNA.

Previously, CRISPR has been used by scientists to modify genes that cause HBB hemolytic anemia or α thalassemia.

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