

CAN CRISPR CURE HIV?

WHAT IS HIV, AND HOW IS IT TREATED?

HIV is a virus that slowly destroys the body's white blood cells, which are integral in fighting disease. If left untreated, HIV leaves the body immunocompromised and unable to fight off disease. HIV eventually progresses to its final stage, which is the development of AIDS.

If you have HIV, the only current option for treatment is ARVs, a medication that prevents the virus from replicating, but will never completely eliminate the virus from your body. You must remain on this medication for the rest of your life. The hope is that CRISPR can prevent individuals from getting HIV via eliminating HIV's pathway to enter the cell.

CRISPR TECHNOLOGY & HIV



CRISPR is a tool used to edit genes. Researchers are able to use CRISPR to delete or turn off certain genes in an organism. To stop an HIV virus, the genes to be targeted by CRISPR technology are CCR5 or Tat & Rev.



CCR5 is a gene that has been found to naturally mutate in humans, resulting in HIV resistance. CRISPR can mutate this gene artificially. A Chinese scientist recently created the world's first genetically engineered HIV resistant baby via deletion of CCR5.



Tat and Rev are genes in HIV that allow the virus to replicate. These Tat and Rev genes are HIV proteins that are essential positive regulators of gene expression. CRISPR can remove these genes, which stops the virus from replicating.

CCR5 & CRISPR

GLOBAL HIV STATISTICS



38.0 million

Total estimated number of individuals living with HIV in 2019.



25.4 million

Number of individuals with HIV that are receiving treatment with ARVs.



33%

Percentage of individuals living with HIV that are not receiving treatment.

