

Re-awakening old genes to help in the fight against HIV

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Dr. Alexander Cole works with students in his lab at the University of Central Florida in Orlando Credit: Jacque Brund

A new vaginal cream containing a reawakened protein could someday prevent the transmission of HIV.

Scientists at the University of Central Florida in Orlando have revived a dormant gene found in humans and coaxed it to produce retrocyclin, a protein that resists HIV.

Lead scientist Alexander Cole used aminoglycosides, drugs commonly used to fight bacterial infections, to trigger the production of the sleeping protein expressed by the retrocyclin gene.

"It could make a huge difference in the fight against HIV," Cole said.

"Much more work would be needed to demonstrate the safety and effectiveness of this approach. We would certainly have to have human trials, but these findings represent a promising step in that direction."

Findings from his three-year investigation are published in this month's [PLOS Biology](#).

HIV is the virus that causes AIDS. The disease, most often transmitted sexually, affects 4.3 million people worldwide, according to the World Health Organization. About 14,560 people die annually from HIV-related complications each year in the United States alone, according to the Centers for Disease Control.

Dozens of scientists around the world are looking for ways to prevent the transmission of the disease. Cole's journey into this area of research began while he was a postdoctoral fellow in the Department of Medicine at the University of California at Los Angeles. While there, he and his colleagues discovered that similar retrocyclin proteins found in early primates appeared to prevent HIV infections in [cell cultures](#). The same gene exists in humans, but because of a mutation, it no longer produces the protein.

Now, in collaboration with researchers at UCLA, the Centers for Disease Control and his team at UCF, Cole has found that restoring the production of retrocyclins prevents HIV entry. He found a way to get the gene to produce the retrocyclins and then showed that the retrocyclins appear to prevent the transmission of HIV. He applied aminoglycoside antibiotics to vaginal tissues and cervical cells in his lab and found the antibiotic appears to stimulate those cells and tissues to produce retrocyclins on their own.

He said there is a good possibility the aminoglycoside antibiotics will be used in a cream or gel format that could someday be a simple way to

prevent the transmission of [HIV](#) from men to women.

Source: University of Central Florida ([news](#) : [web](#))

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