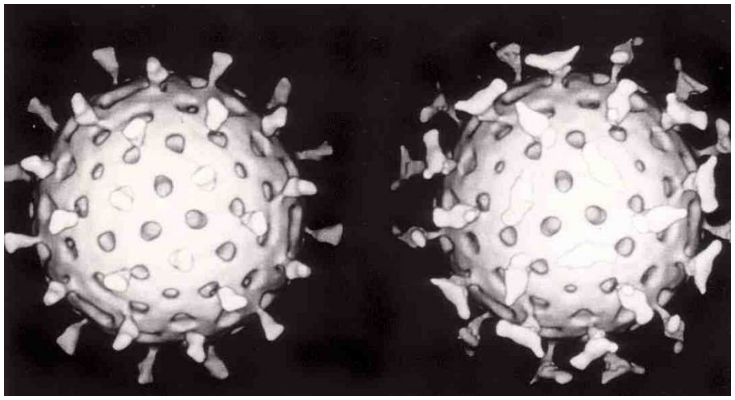
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Scientists say that the body cannot fight HIV-1 due to immunological tolerance

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This discovery can possibly lead to a vaccine that stimulates the production of antibodies to neutralize the HIV-1.



Researchers have discovered that the process that protects the body from autoimmune disease may also prevent it from creating antibodies against HIV-1. This can possibly lead to a vaccine that stimulates the production of antibodies to neutralize the HIV-1.

Patients infected with HIV-1 develop broadly neutralizing antibodies, or bnAbs, that protect against a variety of HIV-1 strains by recognizing a protein on the surface of the virus called Env, which develops after several years of infection.

Researchers suspected that the inability to make antibodies against HIV was due to shared features of HIV-1 bnAbs which suppressed the production of antibodies and causes diseases like systemic lupus erythematosus.

It was found that patients with SLE had slower rates of HIV-1 infection, which could be due to self-reactive antibodies that recognize and neutralize HIV-1. The process known as immunological tolerance was tested in mice with genetic defects of lupus-like symptoms.

"We wanted to see if people could make a protective response to HIV-1 without the normal restraint imposed by the immune system to prevent autoimmunity," Raul M. Torres, professor of immunology and microbiology at the University of Colorado School of Medicine, said in a press release.

The study found the production of HIV-neutralizing antibodies correlated with levels of a self-reactive antibody that recognizes the chromosomal protein Histone H2A.

"We think this may reflect an example of molecular mimicry where the virus has evolved to mimic or look like a self-protein," Torres said, adding that this could explain the difficulty in developing a vaccine for HIV-1.

"But breaching peripheral immunological tolerance permits the production of cross-reactive antibodies able to neutralize HIV-1."

The study was carried out at the University of Colorado and is published in the Journal of Experimental Medicine.