# Rare HIV-positive individuals shed light on how body could effectively handle infection

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Although untreated HIV infection eventually results in immunodeficiency (AIDS), a small group of people infected with the virus, called elite suppressors (0.5 percent of all HIV-infected individuals), are naturally able to control infection in the absence of antiretroviral therapy, or HAART. Elite suppressors and HIV- infected individuals treated with HAART have similar levels of virus in the blood stream.

However, levels of HIV integrated into immune cells are much lower in elite suppressors compared to levels in cells from HIV-infected individuals on HAART, according to a study by University of Pennsylvania School of Medicine researchers published in *PLoS Pathogens*.

Elite suppressors are thought to have a more effective immune response to HIV; specifically, more effective killer T cells, the subgroup of white blood cells that kill cells infected with viruses. HIV is an RNA virus that converts its RNA genome into DNA intermediates in order to replicate. One important step in the HIV life cycle is integration - where HIV DNA inserts into the chromosomes of human helper T cells.

Cells that contain the integrated form of HIV DNA and are metabolically less active appear to be resistant to antiretroviral therapy and persist in the host, forming a latent reservoir. It will be important to understand why the HIV reservoir is lower in elite suppressors than in HIV infected individuals on HAART. To begin to address this question,

it would be interesting to see if the level of integration would be lower still after placing elite suppressors on HAART.

The investigators speculate that therapeutic vaccinations aimed at generating killer T cells similar to those in elite suppressors may be effective against the treatment resistant latent reservoir.

The cohort of elite suppressors was characterized by NIH researchers who also contributed to the study.

**More information:** F Nawaz et al. The genotype of early-transmitting HIV gp120s promotes α4β7 reactivity, revealing α4β7+/CD4+ T cells as key targets in mucosal transmission. PloS Pathogens. DOI: ppat1001301 (2011).

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