

# Exhausted B cells hamper immune response to HIV

**Recent studies have shown that HIV causes a vigorous and prolonged immune response that eventually leads to the exhaustion of key immune system cells--CD4+ and CD8+ T-cells--that target HIV. These tired cells become less and less able to fight the virus, and the cells' fatigue contributes to the inability of an HIV-infected person's immune system to clear the virus from the body.**

Now, researchers at the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, have shown that a similar type of exhaustion strikes another important brigade of immune system soldiers: the B cells that make virus-fighting proteins called antibodies.

In most HIV-infected individuals not receiving antiretroviral therapy, the virus replicates continuously, causing systemic disturbances that include changes in certain subsets of B cells that circulate in the blood. One of these subsets, known as "tissue-like memory B cells," is abundant in HIV-infected individuals who do not control their viral burden. These particular cells show signs of premature exhaustion and a reduced ability to make the high-quality antibodies needed to fight HIV.

As with studies of exhausted CD4+ and CD8+ T cells, these new findings related to exhausted B cells help illuminate the complex immune system damage caused by HIV, and the challenges to rebuilding or bolstering an HIV-infected person's immune system.

NIAID's HIV vaccine research program aims to increase the understanding of B cells to help inform the development of an effective vaccine, and this study contributes to this effort. The authors note that the design of a therapeutic vaccine designed to slow HIV disease progression will need to overcome or circumvent the challenge posed by the inability of certain exhausted B cells to make high-quality antibodies.

Source: National Institute of Allergy and Infectious Diseases

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