Discovery of How HIV Infects Macrophage Cells Could Help Cure Effort

A protein that normally blocks HIV from infecting the immune cells naturally deactivates for small windows of time.

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Researchers have discovered how HIV manages to infect macrophage immune cells, a finding that could help scientists develop a component of a cure for the virus.

HIV-infected macrophages can be a key part of the viral reservoir, which prevents standard antiretroviral treatment from curing HIV.

Publishing their findings in EMBO Journal, researchers studied cultures of macrophages derived from human cells as well as the immune cells in mouse brain tissues.

An antiviral protein known as SAMHD1 on the surface of cells prevents HIV from infecting macrophages in particular. When cells multiply, SAMHD1 is deactivated. However, macrophages in particular do not multiply, so the scientists wanted to understand how HIV managed to infect the cells if they had no apparent occasion to switch off SAMHD1.

The scientists found that for an as-yet-unknown reason, there is a natural process during which SAMHD1 is indeed deactivated for a time in macrophages. They theorize that the protein may be deactivated in order for the cell to fix damaged DNA.

Treating macrophages with drugs called HDAC inhibitors prevented the deactivation of SAMHD1, thus closing the window during which HIV could infect the cells. HDAC inhibitors are used for cancer treatment and also are a component of experimental HIV treatments because they help flush HIV from latently infected (not replicating) cells.

To read a press release about the study, click here.

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