Elite Controllers of HIV May Owe Success to Dendritic Cells

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The rare people who can control HIV without the need for treatment, called elite controllers, have dendritic immune cells that are better able to identify and prompt a defense against the virus. Dendritic cells in elite controllers are more susceptible to infection with the virus—which is actually beneficial, because the cells are then better equipped to warn the rest of the immune system.

Publishing their findings in PLOS Pathogens, researchers studied dendritic cells from elite controllers, people with HIV infection that progresses, and HIV-negative individuals.

Dendritic cells, as part of the body's front line immune response, ingest pathogens and sound an alarm to the rest of the immune system, namely CD4 and CD8 cells, by displaying fragments of the invaders on their surface.

In the non-elite controllers, HIV was blocked from entering dendritic cells at an early point. Elite controllers had higher levels of HIV DNA in their dendritic cells than the others in the study, indicating these cells were more likely to be infected. The researchers theorized that this phenomenon was a result of a reduced expression of the SAMDH1 protein, which blocks reverse transcription—a key phase in HIV's life cycle—in various immune cells. Additionally, the elite controllers' dendritic cells apparently produced higher levels of a protein called cGAS, which recognizes HIV's presence and prompts virus-fighting type 1 interferons, and which leads to a greater CD4 and CD8 response to the virus.

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

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