Cure: HIV Converts T Cells

Some CD4 T cells infected with HIV can transform into CD8 cells.

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Some CD4 T cells infected with HIV can transform into CD8 cells, making up a previously overlooked component of the viral reservoir. Most T cells carrying the CD4 receptor are “helper” cells that coordinate the immune response, while cells bearing the CD8 receptor are “killer” cells that destroy virus-infected and cancerous cells. Researchers compared T cells from people with acute HIV infection, people on antiretroviral treatment with viral suppression and HIV-negative blood donors. Unexpectedly, they found that a subset of latent CD4 cells can convert to induced CD8 cells. These primarily arose from regulatory CD4 T cells, which suppress excessive immune responses. An HIV accessory protein called Nef downregulates CD4 expression, while another called Vpr upregulates CD8 expression; both were necessary to reprogram T cells. Although HIV does not usually infect normal killer T cells, the induced CD8 cells harbored transcriptionally active viral RNA or intact proviral DNA with the potential to produce new virus, which has implications for functional cure strategies.

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