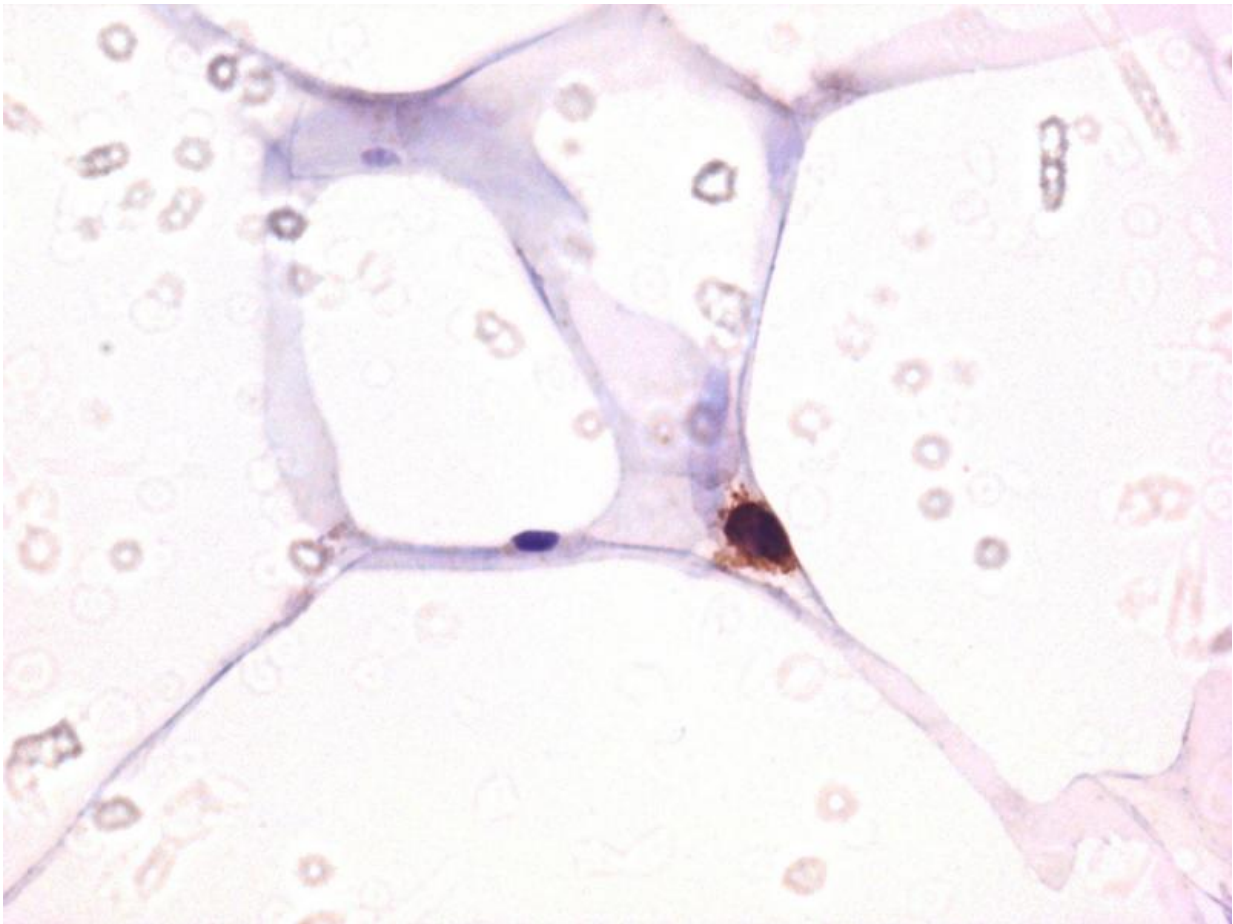


A potential role for fat tissue as an HIV reservoir and source of chronic inflammation

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CD4 staining among adipose tissue demonstrating that the main target of HIV, i.e. CD4 T cells, is indeed detectable in adipose tissue. Credit: CC-BY Damouche et al.

Viral persistence and chronic inflammation are two key features of HIV-positive patients on antiretroviral therapy (ART). A study published on September 24th in *PLOS Pathogens* reports results from macaques and humans that suggest an important role for adipose (fat) tissue as an HIV reservoir with inflammatory potential.

The establishment and persistence of low-grade inflammation in HIV-positive individuals on ART are not well understood. Given that [adipose tissue](#) (which makes up between 15 and 20% of the body weight in healthy people) is a source of inflammation in obese individuals, Christine Bourgeois and Olivier Lambotte, from the University Paris SUD, France, and colleagues, decided to investigate a possible role of the adipose tissue in humans infected with HIV and in macaques infected with simian immunodeficiency virus (SIV, an HIV relative that causes AIDS-like disease in some non-human primates).

They found that SIV infection in [macaques](#) is associated with changes in the composition of the adipose tissue: Fat tissue from infected animals has higher densities of both adipocytes (fat storage [cells](#)) and a mix of differentiated and undifferentiated cells called stromal vascular fraction or SVF that contains a large proportion of immune cells.

Moreover, these immune cells (CD4+ T cells, CD8+ T cells, and macrophages) show enhanced immune activation and/or inflammatory profiles compared with non-infected animals. The researchers were also able to detect SIV DNA and RNA in the combined total SVF as well as in isolated adipose tissue macrophages and CD4+ T cells.

They observed similar results in ART-controlled, HIV-infected patients who had undergone elective abdominal surgery: their SVF samples are positive for HIV DNA, and the researchers could show the presence of infected and virus-producing cells within the patients' adipose tissue and more specifically among adipose CD4+ T cells.

The researchers conclude that they "identified adipose tissue as a crucial cofactor in both viral persistence and chronic immune activation/inflammation during HIV infection", and propose that "modulating adipose tissue may constitute a valuable means of limiting both viral persistence and [chronic inflammation](#) in ART-receiving HIV-infected patients".

More information: Damouche A, Lazure T, Avettand-Fènoël V, Huot N, Dejuq-Rainsford N, Satie A-P, et al. (2015) Adipose Tissue Is a Neglected Viral Reservoir and an Inflammatory Site during Chronic HIV and SIV Infection. *PLoS Pathog* 11(9): e1005153. [DOI: 10.1371/journal.ppat.1005153](#)

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