

# Understanding molecular evolution of HIV and ART



Antiretroviral therapy (ART), although known to be effective for preventing the onset of AIDS does not cure HIV. Even with excellent adherence low levels of virus remain in the blood and these levels rapidly increase as soon as treatment is stopped. Thus it is thought that if we can better understand why current treatments are not equipped to cure HIV infection, new therapies can be developed that address these shortcomings. This study therefore looked at genetic sequences of HIV in patients before starting ART, during antiviral treatment and after viral rebound following treatment interruption. The study found that the low levels of virus detected in the blood of treated patients did not result from newly infected cells but originated from cells, or the daughters of cells, that were already infected when treatment was initiated. Thereby demonstrating that HIV present in blood after prolonged antiviral treatment is derived from cells infected prior to treatment which likely expanded over time through cell division. Importantly, these long lived, infected cells are likely then to possess critical target/s for developing strategies to cure HIV infection.

[Kearney, M. et al. 2014. Lack of Detectable HIV-1 Molecular Evolution during Suppressive Antiretroviral Therapy. \*PLOS\*.](#)