

**POSTER 69****VIRAL DNA IS DETECTED IN MULTIPLE TISSUES AFTER SUSTAINED SUPPRESSION OF PLASMA VIREMIA IN THE RT-SHIV<sub>MNE</sub> MACAQUE MODEL**

Jean Ndjomou<sup>1</sup>, Vicky Coalter<sup>2</sup>, Rebecca Kiser<sup>2</sup>, Michael Piatak, Jr.<sup>2</sup>, Tamera Franks<sup>1</sup>, Jacob D. Estes<sup>2</sup>, Jeffrey D. Lifson<sup>2</sup>, and Zandrea Ambrose<sup>1</sup>

<sup>1</sup>Division of Infectious Diseases, University of Pittsburgh School of Medicine, Pittsburgh, PA; <sup>2</sup>AIDS and Cancer Virus Program, SAIC-Frederick, Inc., Frederick, MD

Combination antiretroviral therapy (ART) represents a gold standard for the treatment of HIV-1 infected individuals, in which plasma viral RNA can reach undetectable levels by clinical assays. However, ART is limited in that it does not eradicate the virus from the body as evidenced by virus rebound after cessation of therapy, indicating the existence of sites of virus persistence. The nature of these viral reservoirs and the mechanisms leading to their generation are not well understood. In this study, we attempted to identify and characterize sanctuary sites harboring virus during spontaneous suppression or suppressive ART. Six pigtailed macaques were infected with RT-SHIV<sub>MNE</sub> (SIV<sub>MNE027</sub> containing the HIV-1<sub>HXB2</sub> RT coding region). Ten weeks post-infection, two animals were treated daily with emtricitabine, tenofovir, and efavirenz for 20 weeks while the others were left untreated. Plasma viremia was measured weekly by quantitative PCR (qPCR) with a limit of detection of 30 viral RNA (vRNA) copies/ml. Multiple tissues were harvested from each animal at 30 weeks post-infection, including the two treated macaques during suppression, and viral DNA (vDNA) was measured by qPCR and normalized by quantitation of a cellular gene. As expected, the animals receiving ART had sustained, undetectable plasma viremia. In addition, 2/4 untreated animals had spontaneous suppression of viremia in the absence of ART. Despite undetectable plasma viremia in the ART animals and spontaneous controllers, vDNA was detected in many tissues, including lymphoid and mucosal tissues. The amount of detectable tissue vDNA appeared to correlate with early plasma viremia levels, suggesting that the size of the reservoirs is determined early in infection. Quantitation of 2-LTR circles and vRNA in tissues is ongoing to determine whether active virus replication is occurring during natural or ART-mediated virus suppression. In addition, *in situ* hybridization may help identify specific cell types that contain replicating virus. Our results indicate that sanctuary sites harboring virus exist even during suppressive therapy, and these may contribute to drug insensitive reservoirs and latently infected cells. The identification of viral reservoirs is important in designing new drugs or modifying existing ART for better strategies to eradicate HIV-1.