1176-92-249 **Sasan Paryad-Zanjani*** (sparyadz@udel.edu) and **Ryan Zurakowski**. *Ongoing replication in lymph nodes sanctuary sites will take years to reach detectable levels in the blood: A mathematical modeling perspective.*

Lymph nodes (LNs) serve as a sanctuary sites for HIV viruses, due to the heterogenous distribution of the anti-retrovirals (ARVs) inside the LNs. There is ongoing debate whether this represents ongoing cycles of viral replication in the LNs or merely residual virus production by latently infected cells. In this study, we used ODEs to model the HIV viral dynamics in the LN to predict the contribution of ongoing replication within the LN to the whole-body proviral pool in an ARV-suppressed patient. We track the reaction-diffusion dynamics of T cell infection in a spherically symmetric model of the LN parenchyma and the blood, distinguishing latently infected cells created before ARV therapy and during suppressive ARV therapy. We simulated therapy following 5 years of infection. Each LN site had volume 1 ml, and we considered cases of a single active sanctuary site (1ml), moderate systemic involvement (30ml), and total lymphoid tissue involvement (250ml). Novel latent cells increased systemically over time, but very slowly, taking between 25 and 50 years to reach 5% of the total latent pool, depending on the volume of lymphoid tissue involvement. Assays to detect genetic drift due to such sites would require very deep sequencing if sampling only from the blood. (Received January 24, 2022)