

1124-92-362

**Ruian Ke\*** (rke2@ncsu.edu), 2311 Stinson Drive, SAS Hall, Raleigh, NC 27695, and **Ricardo Wehrhahn** and **Kai Deng**. *On the turnover rate of the HIV latent reservoir in untreated patients.*

The stability of the HIV latent reservoir, a population of cells latently infected by replication competent HIV but do not actively produce viruses, represents a major barrier to cure HIV infection. The mechanism underlying this stability is not clear. It may be due to a low death rate of latently infected cells; alternatively, it may be due to a dynamical balance between high production and high death rate. Recent data shows that the frequency of cytotoxic T lymphocyte (CTL) escape mutant viruses in the latent reservoir rises to 98% in a majority of untreated patients between 6 months to 2 years after HIV infection. Here, we construct mathematical model to describe the dynamics of transmitted founder virus and CTL escape mutants in the plasma and the reservoir, and use the model to estimate the rate of turnover of the HIV latent reservoir from the recent data. The results suggest that the half-life of the reservoir is at least 10 times shorter in untreated patients than the half-life estimated from treated patients. We further explore possible mechanisms that drive a fast turnover rate in untreated patients. This work sheds light on the dynamic nature of the reservoir and has implications for HIV eradication strategies. (Received September 13, 2016)