

Measurement of HIV/SIV reservoirs

PE14

Defining the Unique biomarkers of latently infected T-cells

Tyagi M.¹, Aiamkitsumrit B.¹, Nekhai S.², Bukrinsky M.¹, Simon G.¹

¹George Washington University, Medicine, Washington, DC, United States, ²Howard University, Medicine, Washington, DC, United States

Background: A critical issue in developing therapeutic approaches to HIV eradication is the identification of latently infected cells. Unfortunately, as yet there is no biomarker that distinguishes latently infected resting T cells from uninfected resting T cells. Research in developing means to identify such latently infected cells has been complicated by the fact that the number of latently infected cells in a single patient is extremely small such that it has not been possible to isolate latently infected cells in sufficient numbers in order to characterize these cells.

Methods: To overcome this limitation, we have developed a primary CD4+ T cell based ex vivo model system of HIV latency. The unique advantage of our model is that it allows us to generate a large and pure population of latently infected primary CD4+ T cells. This approach has provided sufficient material to characterize these cells and define the unique phenotypic characteristics (biomarkers) of latently infected cells. We compared the proteome of cell membranes from both latently infected and uninfected resting T cells. Differentially expressed protein(s) on latently infected T cells can be used as biomarkers.

Results: By cell membrane proteome analysis we have identified 17 putative biomarker proteins that are either predominantly or exclusively expressed on the surface of latently infected cells. We are currently in the process of evaluating these individual proteins for their potential to act as latency biomarkers. Preliminary results appear to be promising as one of the proteins FSI predominantly express on the surface of latently infected T cells. These results as well as analysis of other biomarker proteins will be further discussed.

Conclusions: In order to cure AIDS, eradication of HIV is essential and to eradicate HIV, elimination of latent virus is necessary. However, to selectively kill latent viruses, we need to know specific characteristics of cells that harbor latent viruses, in order to avoid the killing of uninfected bystander cells. Unfortunately, the biomarkers of latently infected cells have not been defined. Thus finding the unique biomarkers of latently infected cells is an initial step in developing a strategy for HIV eradication and curing AIDS.