

Evaluating the Impact of PSF on HIV-1 replication

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The host proteins impacts HIV replication during different stages. The integration of viral DNA into host DNA is catalyzed by viral protein integrase utilizing different host proteins. Identification of these interacting host cellular protein provide better understanding of mechanism of viral replication and subsequently development of new therapeutic approaches. We identified a new HIV-1 integrase interacting protein, Polypyrimidine tract binding protein and associated Splicing Factor (PSF) through in vitro assays. PSF is one of the key factors mediating the posttranscriptional regulation of HIV-1. PSF causes a dose-dependent inhibition of virus production in cell culture, pointing to the possibility that PSF can contribute to the control of HIV-1 propagation in vivo. During *in vitro* interaction study of integrase with host proteins, we observed high score of PSF by mass spectrometry. In an attempt to reveal PSF implication in viral replication, we performed siRNA mediated PSF knockdown and observed significant increase in viral replication in TZM-bl cells. However, qPCR data analysis revealed the changes at cDNA level also. Our studies suggest that PSF negatively regulates the viral replication. The viral 2-LTR, integrated provirus got increased in the PSF knockdown TZM-bl cells. PSF however was not found to affect post-integration steps in viral replication cycle. In order to reveal how PSF affects the integration events, we performed molecular docking and simulation studies with ternary complex of PSF: IN: viral dsDNA and binary complex i.e. PSF:IN. We therefore proposed that IN, PSF and viral DNA form a ternary complex during integration process to cross talk with each other.

Biography

Pooja Yadav has completed her PhD from University of Delhi, India and currently affiliated to Jawaharlal Nehru University. She has published 6 papers in reputed journals during her PhD study.

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