Retrovirology

Poster presentation

GCN5-dependent acetylation of HIV-1 integrase enhances viral integration

Mariaelena Terreni[1], Vania Liverani[1], Maria Ines Gutierrez[2], Cristina Di Primio[1], Armida Di Fenza[3], Valentina Tozzini[3], Alberto Albanese[3], Daniele Arosio[3], Mauro Giacca[2] and Anna Cereseto*[1]

Address: [1]Molecular Biology Laboratory, Scuola Normale Superiore, Pisa, Italy, [2]Molecular Medicine Laboratory, International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, Italy and [3]NEST, CNR-INFM and Scuola Normale Superiore, Pisa, Italy

* Corresponding author

from Frontiers of Retrovirology: Complex retroviruses, retroelements and their hosts
Montpellier, France. 21-23 September 2009

Published: 24 September 2009

Retrovirology 2009, **6**(Suppl 2):P20 doi:10.1186/1742-4690-6-S2-P20

This abstract is available from: http://www.retrovirology.com/content/6/S2/P20

Our former report showed that HIV-1 integration is positively regulated by the histone acetyltransferase (HAT) p300. In this study we demonstrate that another cellular HAT, GCN5, acetylates integrase leading to enhanced 3'-end processing and strand transfer activities. GCN5 plays a role during the integration step of the replication cycle as demonstrated by reduced infectivity due to lower provirus formation in cells silenced for GCN5. Within the C-terminus of integrase four lysines (K258, K264, K266 and K273) are targeted by GCN5 acetylation, three of which (K258, K264, K266) are also modified by p300. A viral replication analysis of HIV-1 viral clones carrying substitutions in lysines targeted by both GCN5 and p300 or exclusively by GCN5, demonstrated that these lysines are required for efficient viral integration. These results should clarify a recent debate raised on the role of these lysines during HIV-1 replication. In addition a comparative analysis of the replication efficiency of these viral clones demonstrate that, even though the lysines commonly targeted by both GCN5 and p300 are necessary for efficient integration, the lysine exclusively modified by GCN5 (K256) does not affect virus integration. In conclusion this study further demonstrates the relevance of integrase acetylation, which results from the catalytic activity of multiple HATs during the viral life cycle.