

A role for the tetraspanin CD81 on the late steps of HIV-1 replication in T-lymphoblastic cells

Delphine Muriaux

► **To cite this version:**

Delphine Muriaux. A role for the tetraspanin CD81 on the late steps of HIV-1 replication in T-lymphoblastic cells. 16th International Symposium on HIV and Emerging Infectious Diseases, Mar 2010, Marseille, France. BioMed Central, 7 (Suppl 1), pp.P6, 2010, Retrovirology. <10.1186/1742-4690-7-S1-P6>. <inserm-00663896>

HAL Id: inserm-00663896

<http://www.hal.inserm.fr/inserm-00663896>

Submitted on 27 Jan 2012

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



POSTER PRESENTATION

Open Access

A role for the tetraspanin CD81 on the late steps of HIV-1 replication in T-lymphoblastic cells

Delphine Muriaux

From 16th International Symposium on HIV and Emerging Infectious Diseases
Marseille, France. 24-26 March 2010

Background

HIV-1 uses cellular co-factors for virion formation and release, and is able to incorporate host cellular proteins in the viral particles, such as tetraspanins which serve as gateways for HIV-1 egress. Here, we investigated the implication of several tetraspanins on HIV-1 formation and release in chronically infected T-lymphoblastic cells, a model that permits the study of the late steps of HIV-1 replication in persistent infected cells.

Methods

HIV-1 infected MOLT cells were analyzed for HIV-1 production by RT assays and Western blot analysis. Gag-Tetraspanins associations were analyzed by immunoprecipitations in the purified virions and in the infected cells and by immunofluorescence confocal microscopy analysis. Down-regulation of CD81 expression in HIV-1 chronically infected MOLT cells was performed by shRNA lentiviral vectors and infectivity was monitored on SupT1 cells.

Results

Our data revealed that HIV-1 Gag and Env structural proteins colocalized with specific tetraspanins in the form of clusters at the cell surface. Co-immunoprecipitation experiments showed that viral Gag proteins interact, directly or indirectly, with the CD81 tetraspanin, and less with CD82, but not with Lamp2 or CD45, in tetraspanin-enriched microdomains composed of CD81/CD82/CD63.

When HIV-1 producing cells were treated with anti-CD81 antibodies or upon CD81 silencing by RNA interference, HIV-1 release was significantly impaired and its infectivity on SupT1 lymphocytes was modulated. We observe that CD81 downregulation in HIV-1 infected

T-lymphoblastic cells resulted in Gag redistribution at the cell surface and an increase in infectivity.

Discussion

Our results highlight a critical role for CD81 on HIV assembly in T lymphoblastic cells [1], which was also reported in HIV-1 infected monocytes derived macrophages [2], and on HIV transmission in CD4⁺ T cells [3] and dendritic cells [4]. In addition, our findings extend the notion that even if HIV-1 assembly can occur on tetraspanin-enriched microdomains containing CD81, the incorporation of CD81 in the viral particles restrict HIV-1 infectivity. This notion can be extended to other cell membrane proteins, such as Hdlg, a cell-cell junction protein, that can also modulate HIV-1 infectivity [5].

Published: 11 May 2010

References

1. Grigorov, *et al: Retrovirology* 2009.
2. Deneka, *et al: J Cell Biol* 2007.
3. Jolly, *et al: J Virol* 2007.
4. Garcia, *et al: Traffic* 2005.
5. Perugi, *et al: Mol Biol Cell* 2009.

doi:10.1186/1742-4690-7-S1-P6

Cite this article as: Muriaux: A role for the tetraspanin CD81 on the late steps of HIV-1 replication in T-lymphoblastic cells. *Retrovirology* 2010 **7** (Suppl 1):P6.