

## **HIV-1 capture and antigen presentation by dendritic cells: enhanced viral capture does not correlate with better T-Cell activation**

Maria Rodriguez-Plata, Alejandra Urrutia, Sylvain Cardinaud, Maria Buzon, Nuria Izquierdo-Useros, Julia Prado, Maria Puertas, Itziar Erkizia, Pierre-Grégoire Coulon, Samandhy Cedeño, et al.

► **To cite this version:**

Maria Rodriguez-Plata, Alejandra Urrutia, Sylvain Cardinaud, Maria Buzon, Nuria Izquierdo-Useros, et al.. HIV-1 capture and antigen presentation by dendritic cells: enhanced viral capture does not correlate with better T-Cell activation. *Retrovirology*, BioMed Central, 2012, 9 (Suppl 2), pp.P2. inserm-00731777

**HAL Id: inserm-00731777**

**<https://www.hal.inserm.fr/inserm-00731777>**

Submitted on 13 Sep 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

# HIV-1 capture and antigen presentation by dendritic cells: enhanced viral capture does not correlate with better T-Cell activation

M Rodriguez-Plata<sup>1\*</sup>, A Urrutia<sup>2</sup>, S Cardinaud<sup>2</sup>, M Buzon<sup>1</sup>, N Izquierdo-Useros<sup>1</sup>, JG Prado<sup>1</sup>, M Puertas<sup>1</sup>, I Erkizia<sup>1</sup>, P Coulon<sup>2</sup>, S Cedeño<sup>1</sup>, B Clotet<sup>1</sup>, A Moris<sup>3</sup>, J Martinez-Picado<sup>1</sup>

From AIDS Vaccine 2012

Boston, MA, USA. 9-12 September 2012

## Background

During HIV-1 infection, dendritic cells (DC) facilitate dissemination of HIV-1 while trying to trigger adaptive antiviral immune responses. We examined whether increased HIV-1 capture in DC matured with lipopolysaccharide (LPS) results in more efficient antigen presentation to HIV-1-specific CD4<sup>+</sup> and CD8<sup>+</sup> T cells. In order to block the DC-mediated trans-infection of HIV-1 and maximize antigen loading, we also evaluated a non-infectious integrase-deficient HIV-1 isolate, the HIV<sub>NL4-3ΔIN</sub>.

## Methods

Immature DC (iDC), mature DC (mDC) activated with IL-1β, TNF-α, IL-6, and PGE2 (ITIP) or LPS during viral uptake, and fully mDC matured with ITIP or with LPS for 48 h before viral loading were tested. Antigen presentation to HIV-1-specific CD4<sup>+</sup> and CD8<sup>+</sup> T cell clones was quantified by IFN-γ ELISPOT. DC-associated p24<sup>Gag</sup> HIV-1 and DC-mediated HIV-1 trans-infection were also evaluated in parallel.

## Results

We showed that higher viral capture of DC did not guarantee better antigen presentation or T-cell activation. Greater HIV<sub>NL4-3</sub> uptake by fully LPS-matured DC resulted in higher viral transmission to target cells but poorer stimulation of HIV-1-specific CD4<sup>+</sup> and CD8<sup>+</sup> T cells. Conversely, maturation of DC with LPS during—but not before—viral loading enhanced both HLA-I and HLA-II HIV-1-derived antigen presentation. On the other hand, DC maturation with ITIP during viral uptake only

stimulated HIV-1-specific CD8<sup>+</sup> T cells. Integrase-deficient HIV<sub>NL4-3ΔIN</sub> was also efficiently captured and presented by DC through HLA-I and HLA-II pathways, but in absence of viral dissemination.

## Conclusion

Hence, DC maturation state, activation stimulus, and time lag between DC maturation and antigen loading impact HIV-1 capture and virus antigen presentation. Our results demonstrate a dissociation between the capacity to capture HIV-1 and to present viral antigens. HIV<sub>NL4-3ΔIN</sub> seems to be an attractive candidate to be explored. These results provide new insights into DC biology and have implications in the optimization of DC-based immunotherapy against HIV-1 infection.

## Author details

<sup>1</sup>AIDS Research Institute IrsiCaixa, Badalona, Spain. <sup>2</sup>INSERM, UMRS-945, Infection and Immunity, Université Pierre et Marie C, Paris, France. <sup>3</sup>INSERM, UMRS-945, Infection and Immunity, Univ. Pierre et Marie Curie, Paris, France.

Published: 13 September 2012

doi:10.1186/1742-4690-9-S2-P2

Cite this article as: Rodriguez-Plata et al.: HIV-1 capture and antigen presentation by dendritic cells: enhanced viral capture does not correlate with better T-Cell activation. *Retrovirology* 2012 **9**(Suppl 2):P2.

<sup>1</sup>AIDS Research Institute IrsiCaixa, Badalona, Spain  
Full list of author information is available at the end of the article