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# IMMUNE ACTIVATION CORRELATES WITH EXPRESSION of CD32 on CD4⁺ T CELLS of HIV PATIENTS

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## BACKGROUND

In a recent landmark paper Descours *et al.* discovered that CD32 can serve as a marker of *in vitro* HIV infected CD4⁺ T cells and is expressed on CD4⁺ T cells of HIV infected individuals. CD32 is known as a low-affinity receptor for the IgG Fc fragment and is mostly expressed on monocytes, neutrophils and eosinophils. Notably, no expression on bystander cells was detected and infection frequencies correlated with the expression of CD32.

The aim of our work is to further characterize the distribution of CD32 on CD4⁺ T cell subpopulations in mononuclear cells from peripheral blood and lymph nodes and to investigate its relevance as a potential marker of latently HIV infected cells.

## PATIENTS

**Table 1: Cohort characteristics**.

Values are medians (ranges); * level of detection: 50 copies/mL; LN: lymph node.

| Classification | n | Age | Male (%) | Female (%) | Viral Load (Copies/mL)* | CD4 Count (Cells/µL) |
|---|---|---|---|---|---|---|
| Healthy subjects | 14 | 26 (22–70) | 57 | 43 | Not applicable | Not applicable |
| Patients on ART | 13 | 45 (34–69) | 100 | 0 | Below level of detection | 534 (131–1030) |
| Viremic patients | 23 | 41 (25–62) | 70 | 30 | 75,500 (41,500–22,500) | 263 (1–829) |
| LN of uninfected individuals | 5 | 53 (28–70) | 80 | 20 | Not applicable | Not applicable |
| LN of infected patients on ART | 4 | 40.5 (26–57) | 75 | 25 | 2.5 (2–5) | 181 (106–803) |
| LN of infected, viremic patients | 4 | 29 (26–35) | 75 | 25 | 55,337.5 (49,000–71,000) | 389 (254–546) |

## METHODS

Multicolour flow cytometry was performed with mononuclear cells from peripheral blood (n=50) and lymph nodes of patients (n=13) with diverging viral loads as well as healthy controls. The panel contains antibodies for the analysis of T cells as subsets of lymphocytes (CD3, CD4, CD8), central, transitional and effector memory cells (defined by CD3, CD4, CD8, CD45RA, CD27, CCR7), regulatory T cells (CD25, CD127) as well as long term memory populations (CD127) and HIV co-receptors (CCR5, CXCR4). All data are presented as mean + SD.

## CONCLUSIONS

CD32⁺ CD4⁺ T cells show higher HLA-DR expression than their CD32⁻ counterparts regardless of disease status. Furthermore, expression of CD32 on total CD4⁺ T cells and TTM of viremic patients correlates with general immune activation (HLA-DR on CD8⁺).

Thus, we propose a link between immune activation and CD32 expression.

## ACKNOWLEDGEMENTS

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## RESULTS

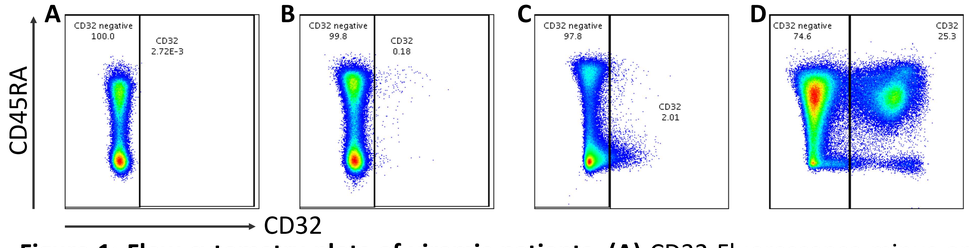



**Figure 1: Flow cytometry plots of viremic patients. (A)** CD32 Fluorescence minus one (FMO) control for CD32. CD32 expression on PBMC **(B)** CD3⁺ CD4⁺ **(C)** CD3⁺ CD8⁺ **(D)** CD3⁻.

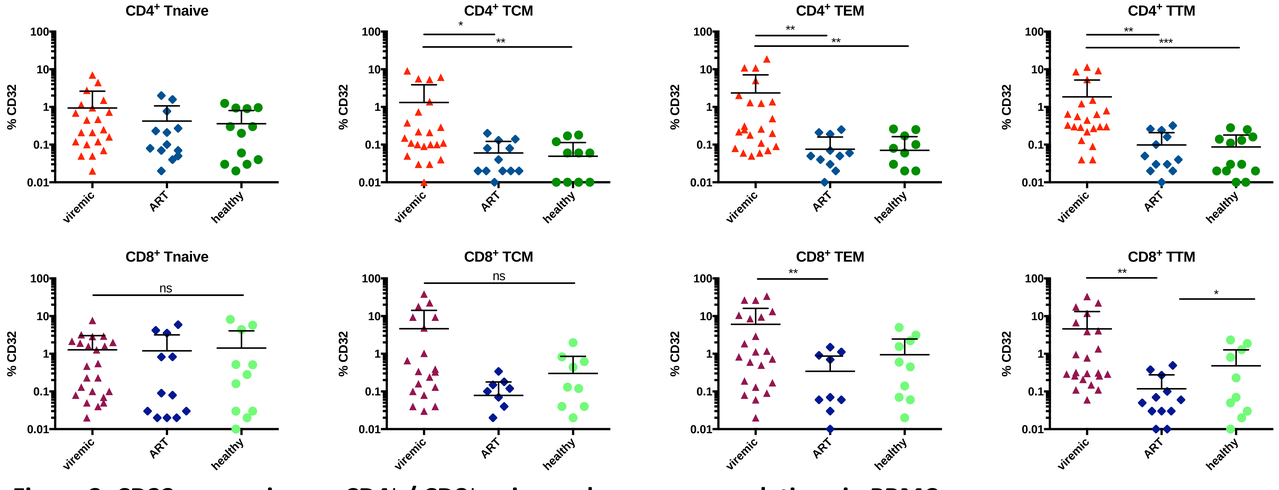



**Figure 2**: **CD32 expression on CD4⁺ / CD8⁺ naive and memory populations in PBMC.** CD32 expression is higher on CD8⁺ compared to CD4⁺ T cells. Significantly more CD32 is expressed on both CD4⁺ and CD8⁺ memory subpopulations of viremic HIV patients (red) compared to patients on ART (blue) or healthy individuals (green).

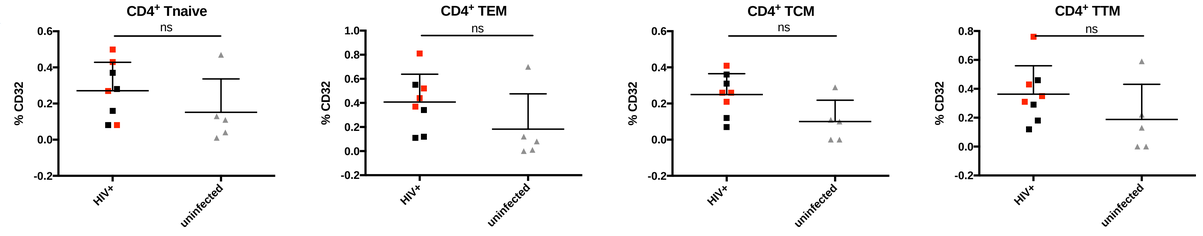



**Figure 3**: **CD32 expression on CD4⁺ naive and memory populations in LNMC.** Viremic patients are indicated by red symbols.

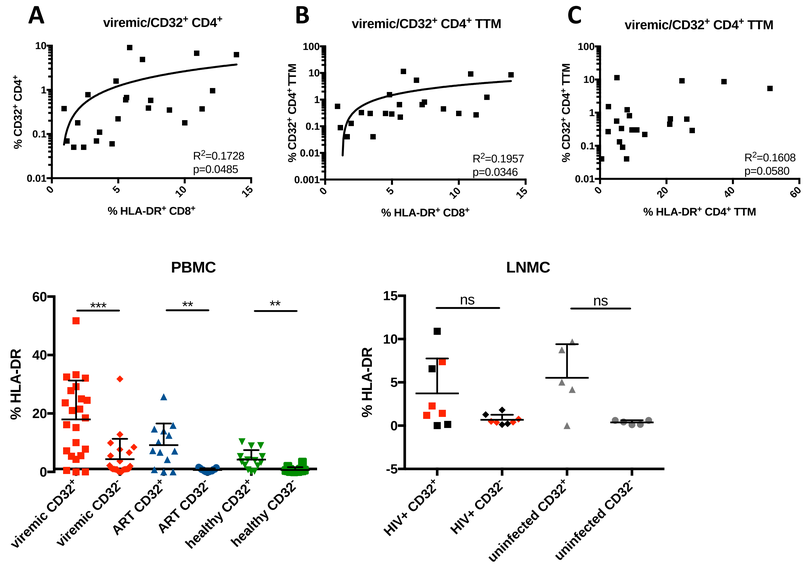



**Figure 4**: **HLA-DR expression on CD8⁺ T cells correlates with CD32⁺.** HLA-DR expression on CD8⁺ T cells correlates with CD32 expression on CD4⁺ **(A)** and CD4⁺ TTM (**B**). **(C)** HLA-DR expression on CD4⁺ TTM does not correlate with CD32 expression on CD4⁺ TTM.

**Figure 5**: **HLA-DR expression is higher on CD32⁺ CD4⁺ T cells.** HLA-DR expression on PBMC (left) and LNMC (right). Viremic patients are indicated by red symbols.