Spatial localization of HIV infected macrophages in lymph nodes using multicolor Tissue FAX imaging

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Introduction

One of the major hurdles to the complete eradication of HIV is the establishment of persistent long-lived HIV-infected cells

CD4+ T cells remain one of the well characterized HIV reservoirs. However, cumulative evidence suggests that tissue macrophages may potentially harbor persistent HIV.

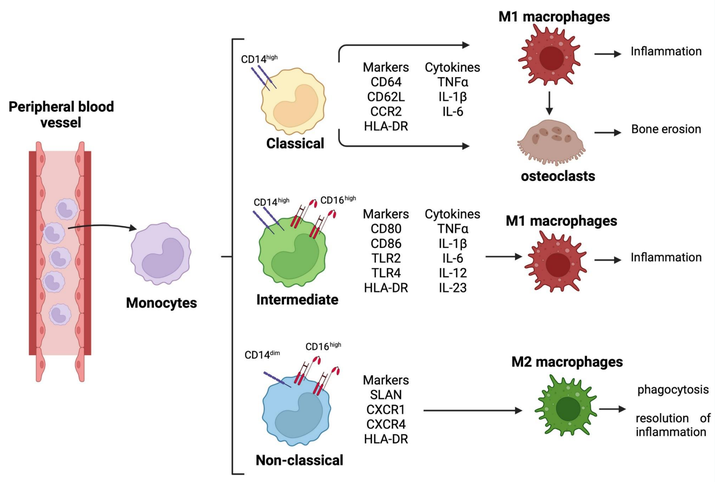

Figure 1: Macrophage polarization. In addition, the effect of HIV on macrophage frequency and whether macrophages contribute significantly to the HIV reservoir is subject to debate.

Experimental design

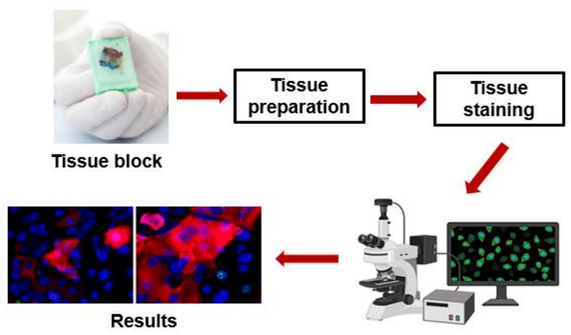

Figure 2: Tissue staining experimental design

Inclusion criteria

- Adults >18 years
- HIV Neg
- HIV Pos (ET)
- HIV Pos (LT) individuals

Aims

1. To phenotypically characterise human lymph node macrophage subsets.
2. To spatially define the localization of HIV-infected macrophages in LN tissues of HIV-infected individuals.

Conclusions

CD68⁺ macrophages were evenly distributed throughout lymph node tissues and co-stained with HIV-Gag p24.

In contrast, CD206⁺ macrophages were mostly localized along lymph vessels and outside the germinal centers and did not co-stain with HIV-Gag p24.

Our preliminary findings suggest that macrophages may be a potential source of HIV persistence in lymph node tissues.

Results

Lymph node tissue sections were stained with macrophage markers CD68 and CD206. BCL-6 was used to define active germinal centers.

CD68+ macrophages were evenly distributed throughout lymph node tissues.

In contrast, CD206+ macrophages were mostly localized along lymph vessels and outside the germinal centers. Similar results were obtained after staining with the CD163 macrophage marker.

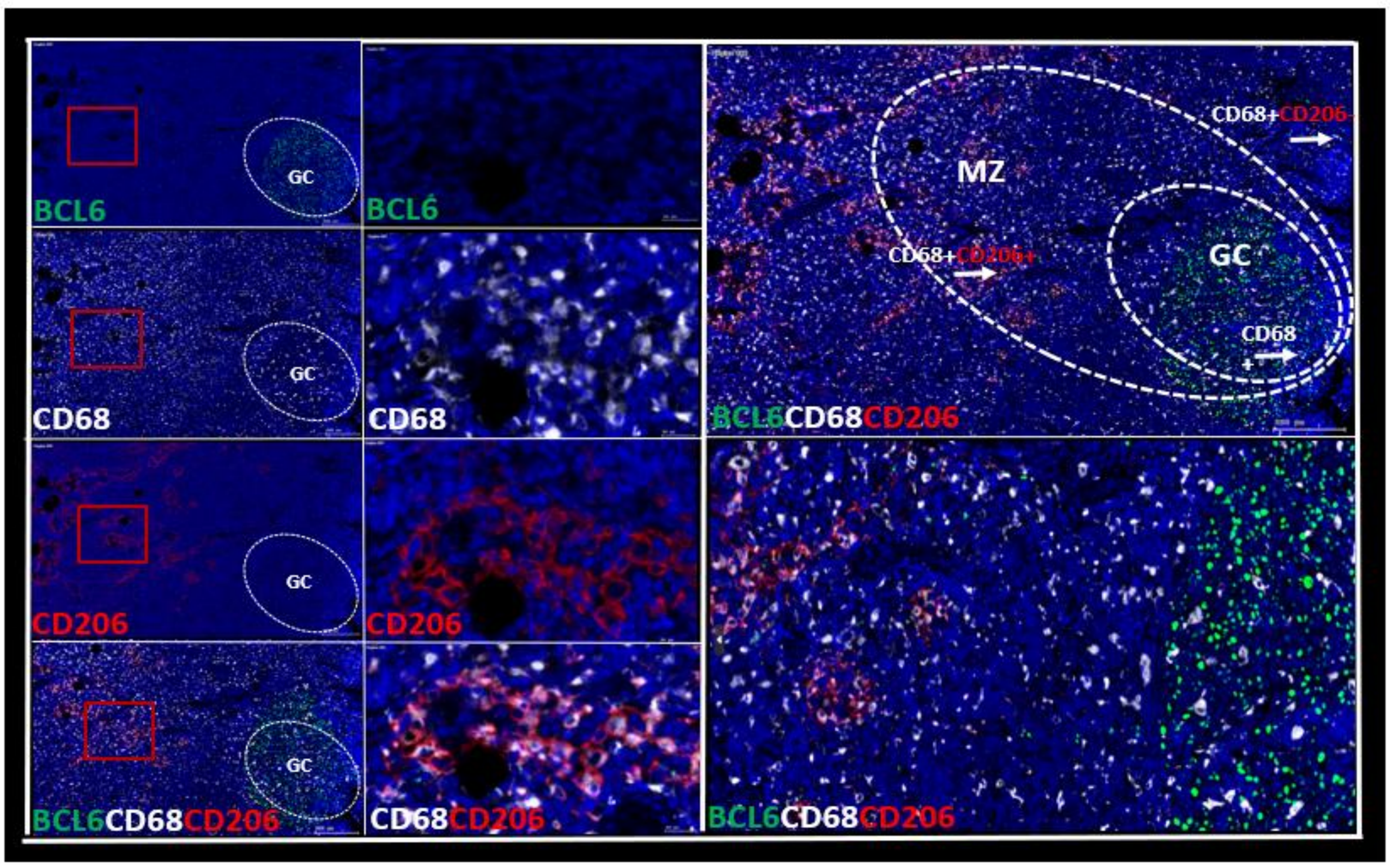

Figure 3: Localization of CD68+ and CD206+ cells in lymph nodes. Lymph node sections stained with CD68 (white), CD206 (red), and DAPI (blue). Images were scanned at x20 magnification and scale bars equal 100μm.

Lymph node tissue sections were stained with the macrophage markers CD68 and CD206. BCL-6 was used to define active germinal centers.

CD68+ macrophages harboring HIV-Gag p24 were only detected in the germinal centers.

In contrast, CD206+ macrophages did not co-stain with HIV-Gag p24. Similar results were obtained after staining with the CD11B macrophage marker.

Figure 4: Localization of CD68+ and P24+ cells in lymph nodes. Lymph node sections stained with CD68 (white), Gag P24 (orange), and DAPI (blue). Images were scanned at x20 magnification and scale bars equal 100μm.

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