

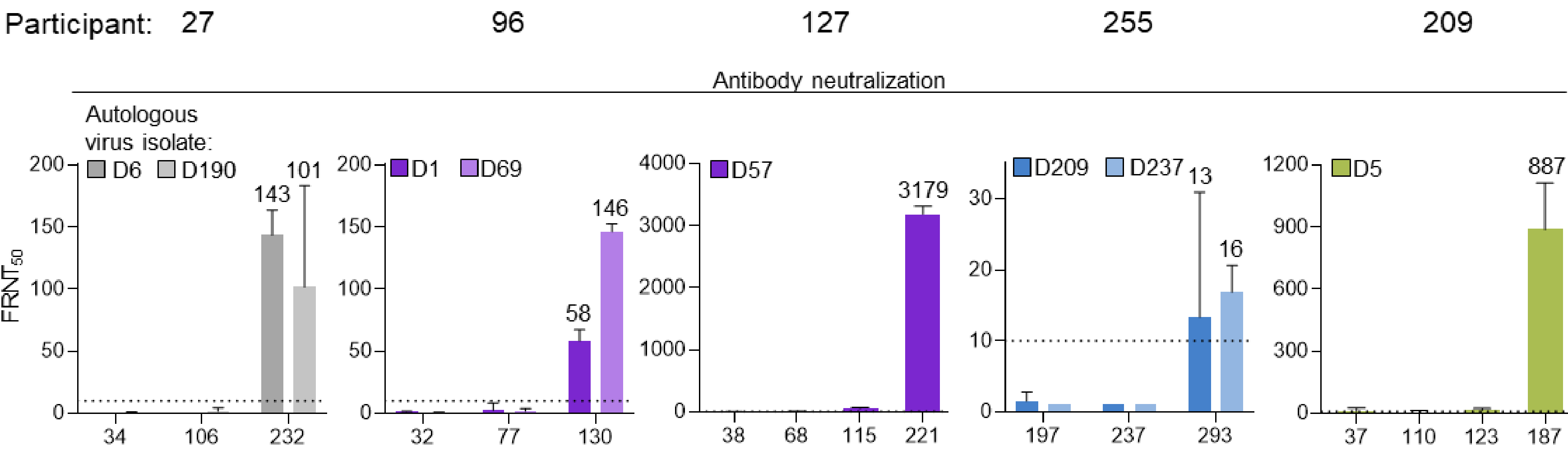
Emergence of neutralizing antibodies associates with clearance of SARS-CoV-2 during HIV-mediated immunosuppression

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Background

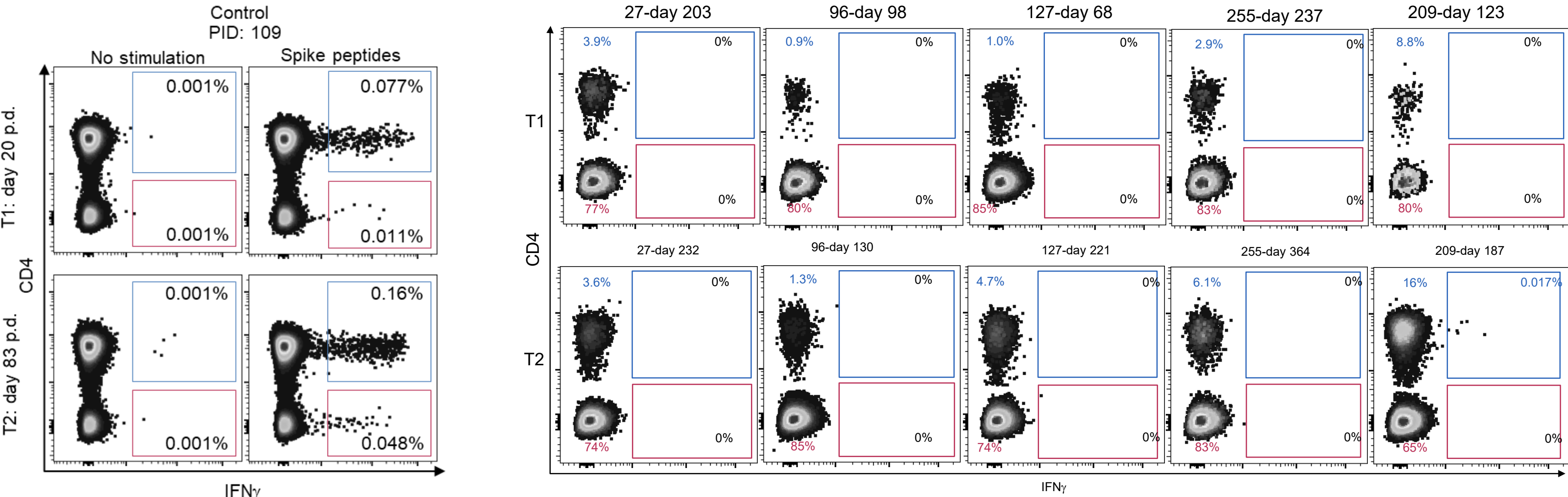
- Emergence of new variants through SARS-CoV-2 evolution compromises the effectiveness of current vaccines.
- Persistent SARS-CoV-2 infection because of immunosuppression may drive accelerated SARS-CoV-2 evolution and it is therefore critical to understand how such persistent infections can be cleared.
- While adaptive immunity is known to be required for SARS-CoV-2 clearance, the relative contribution of neutralizing antibodies and T cells to clearance in immunosuppression is not well understood.
- Here we examined whether neutralizing antibody and T cell responses are associated with the clearance of persistent SARS-CoV-2 infection in people recovering from advanced HIV-mediated immunosuppression through adherence to HIV antiretroviral therapy.

SARS-CoV-2 clearance in advanced HIV disease immunosuppression associates with neutralizing antibody response



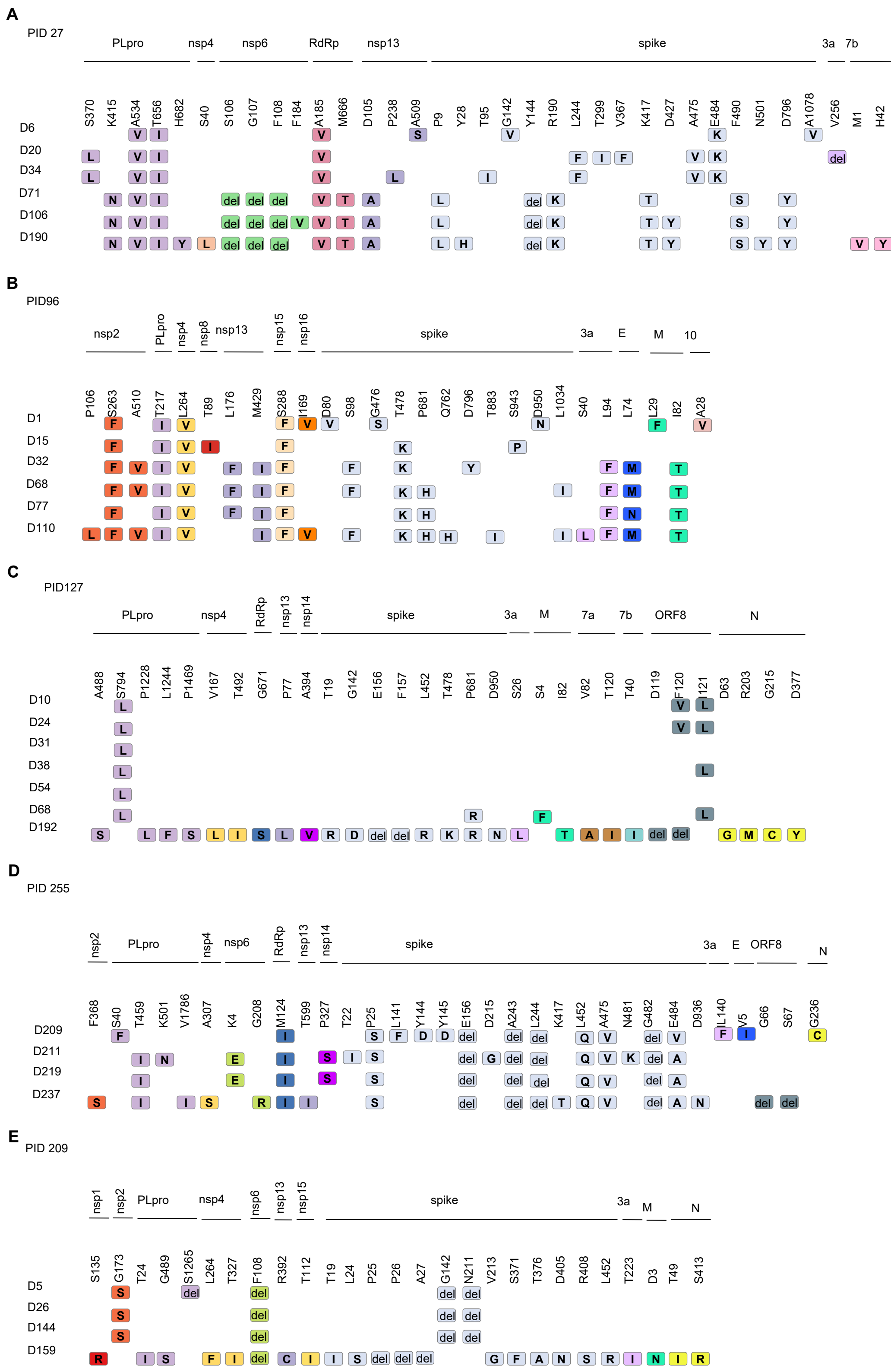
Neutralization by plasma from each participant sampled at different timepoints of SARS-CoV-2 infection with virus isolated from the same participant. One to two autologous viruses were tested per participant and are indicated top left on each graph by day of isolation post-diagnosis. Numbers above bars are geometric mean FRNT50, and error bars are geometric mean standard deviations of FRNT50.

SARS-CoV-2 specific T cell responses in controls and advanced HIV disease



Flow cytometry results showing CD4 (blue) and CD8 T cell (red) frequencies in advanced HIV disease participants at two timepoints (T1, pre-SARS-CoV-2 clearance; T2, post-SARS-CoV-2 clearance).

Substitutions or deletions in SARS-CoV-2 sequences of advanced HIV disease participants through time



Horizontal axis indicates the SARS-CoV-2 protein where substitution or deletion occurred relative to the infecting strain and vertical axis is the time post-diagnosis the viral isolate was obtained.

- Neutralizing antibodies may be required for SARS-CoV-2 clearance in recovery from HIV mediated immunosuppression.
- Successful management of HIV is necessary to curtail evolution of co-infecting pathogens.

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