

Insights to a Cure: Unique Controller Phenotypes in the Rotterdam HIV-2 Cohort

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BACKGROUND

HIV-2, although less common than HIV-1, exhibits a **higher proportion of elite controllers (ECs)**, who can suppress HIV without antiretroviral therapy (ART), a phenomenon rarely observed in HIV-1. Studying ECs could yield insights into **viral control mechanisms** and potentially lead to a **cure for HIV**.

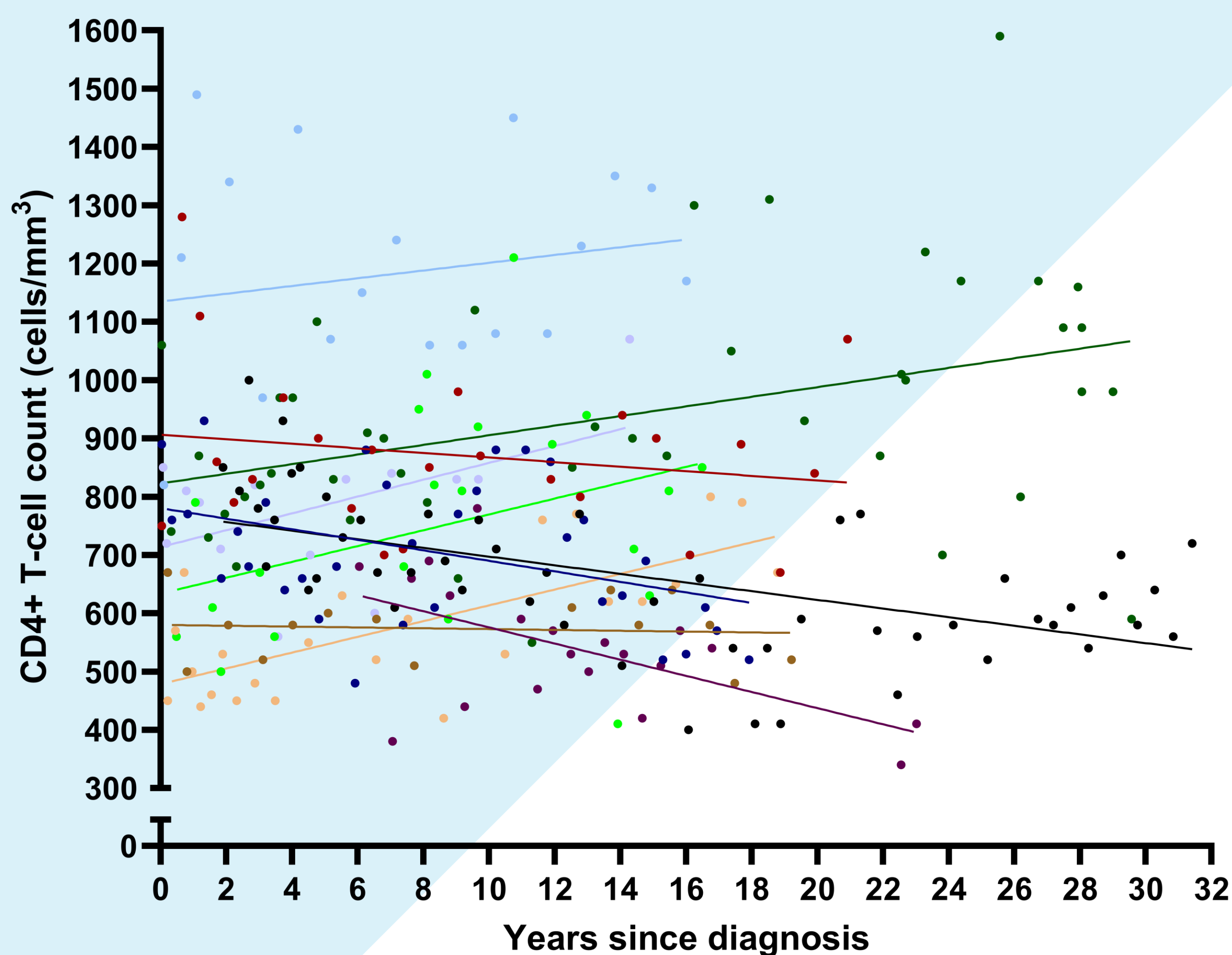
RESULTS

Baseline Characteristics

- From 1989-2023, **52 people living with HIV-2** included
- West African origin: 80.8%
- Female: 51.9% & male 48.1%
- Follow-up range <1-32 years (median 16 years)
- 7 lost to follow-up, 18 passed away (7 pre-ART availability)
- Median CD4+ T cell count at diagnosis: 240 cells/mm³ (80-740)

Elite controllers (n=13)

- HIV-2 viral load <200 c/mL*, CD4+ T cell count >350 cells/mm^{3**}
- 92,3% female
- 10 participants in care for more than 10 years:



Loss of control (n=3)

- ≥5 years: elite controller status
- Then ≥2 subsequent measurements >200 copies/mL and <350 cells/mm³ or AIDS-defining conditions → ART initiation.

Viremic progressor (n=19)

'Classical' phenotype with high HIV-2 plasma viral load and decreasing CD4+ T cell counts → ART initiation.

HIV-1 & HIV-2 (n=5)

Confirmed HIV-1 and HIV-2, median CD4+ T cells 50 cells/mm³ at diagnosis → ART initiation.

Pre-ART (n=7)

Passed away before ART availability due to AIDS.

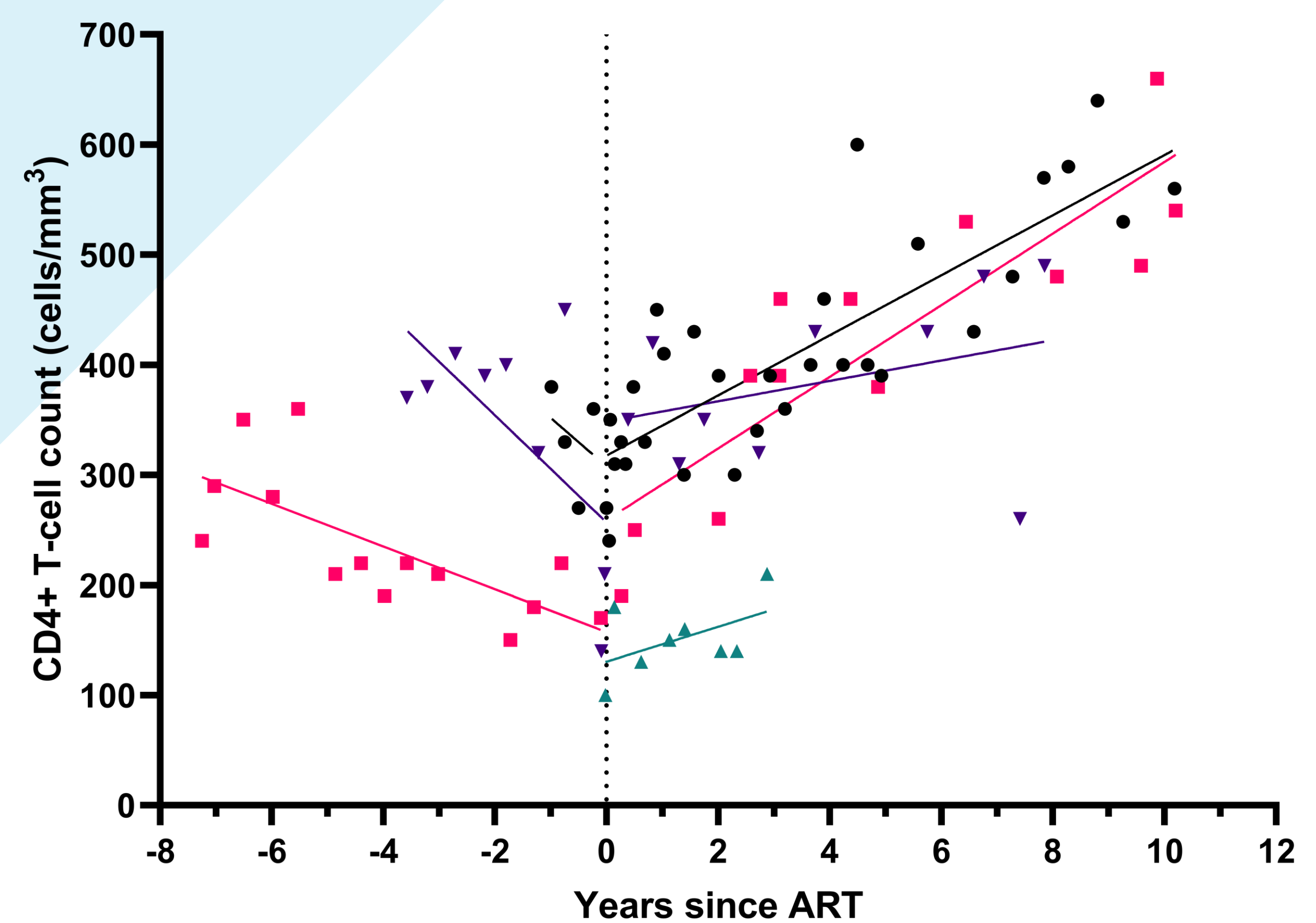
*One blip >200 copies/mL allowed; **One dip <350 cells/mm³ allowed

METHODS

- **Retrospective cohort study** at Erasmus University Medical Centre, Rotterdam, the Netherlands
- **Adult people diagnosed with HIV-2**
- Categories based on HIV-2 plasma viral load, CD4+ T cell counts, and use of ART

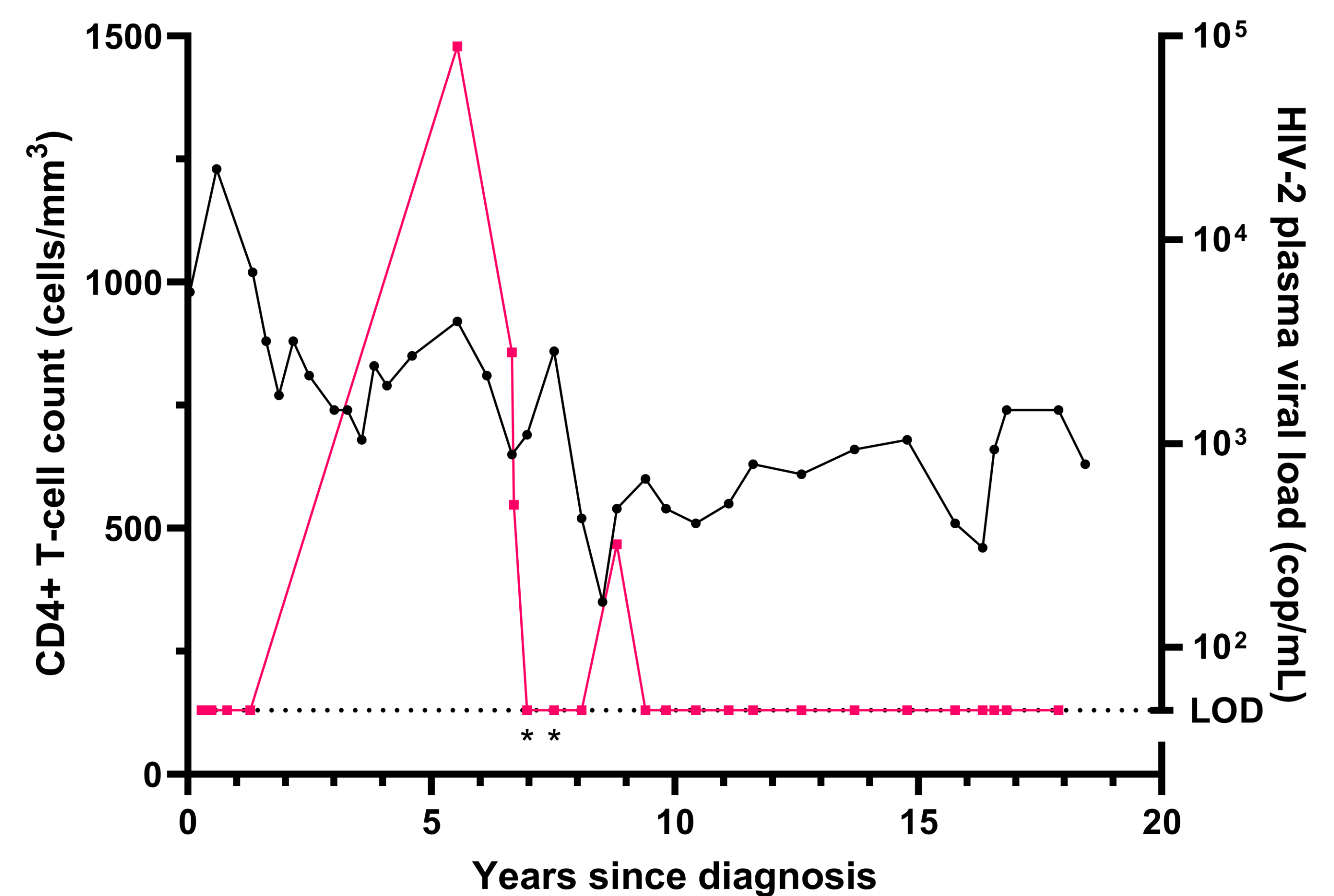
Non-viremic progressor (n=4)

All viral loads <200 copies/mL, initiated ART due to CD4+ T cell counts <350 cells/mm³.



Re-controller (n=1)

No ART use.



LOD = 50 copies/mL, *500 copies/mL

CONCLUSIONS

- HIV-2 control more complex than previously thought.
- **Non-viremic progressors** are a notable category.
- **Monitor elite controllers** and start ART early to prevent AIDS.
- Study different levels of viral control to identify **biomarkers** or characteristics that explain **control mechanisms**.
- Find a cure for all people living with HIV.