RNA Sequencing of CD4+ T Cells Reveals Similarities in Aging With and Without ART-Suppressed HIV

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BACKGROUND

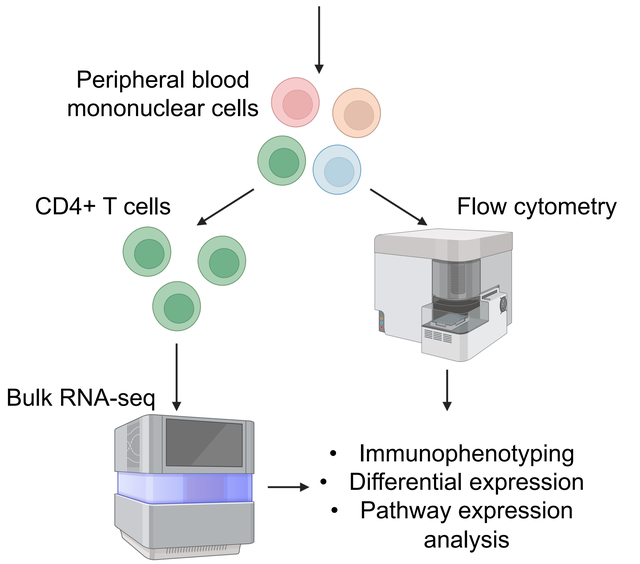
Since the advent of effective antiretroviral therapy (ART), HIV infection has shifted from a fatal disease to a chronic condition, resulting in dramatically increased life expectancy. As a consequence, more than 50% of PLWH in the United States are now over the age of 50. Despite long-term viral suppression, PLWH experience persistent immune activation and chronic inflammation, a phenotype that is thought to contribute to the increased risk of age-associated comorbidities among PLWH, including cardiovascular disease, neurocognitive impairment, and malignancy.

The causes and mechanisms of this of this chronic inflammation and how it may interact with the process of aging remain areas of active study. Here, we aim to investigate the relationship between ART-suppressed chronic HIV infection and age in CD4+ T cells using RNA-sequencing and flow cytometry.

METHODS

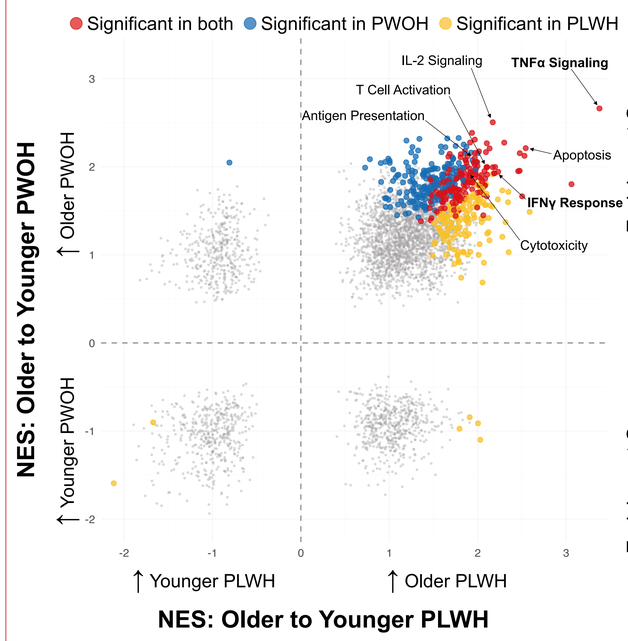
HIV-Aging cohort members

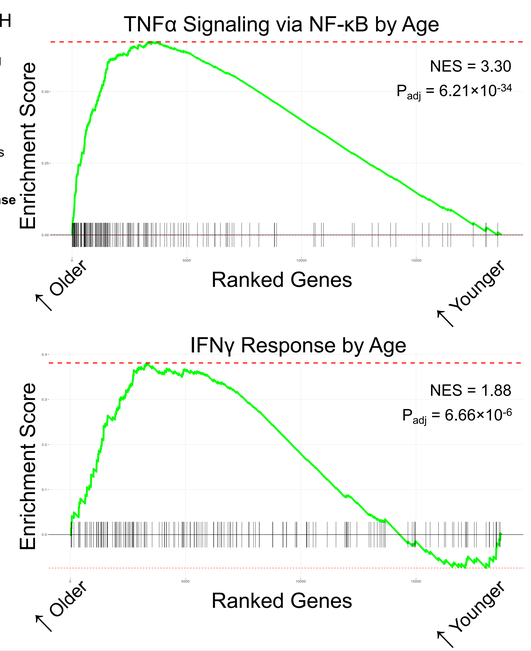
	PWOH-Y	PWOH-O	PLWH-Y	PWLH-O
n	24	25	31	28
Age Range	18-35	50+	18-35)	50+
M:F	12:12	15:10	20:11	15:13

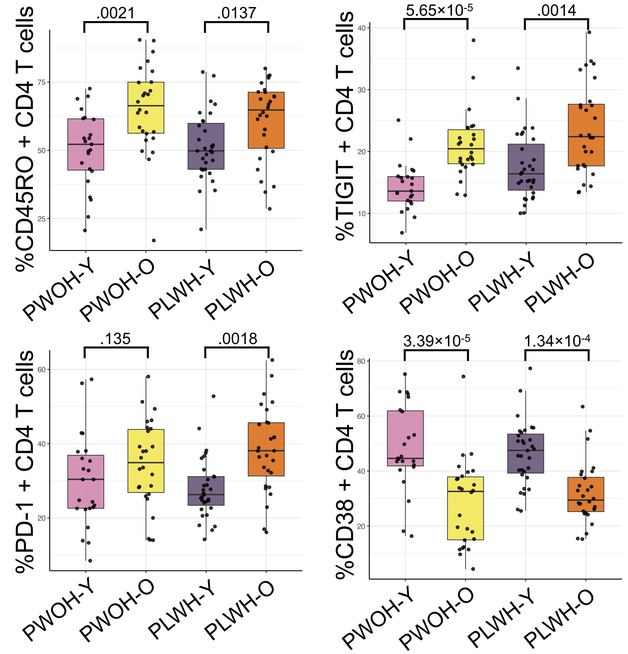


RESULTS

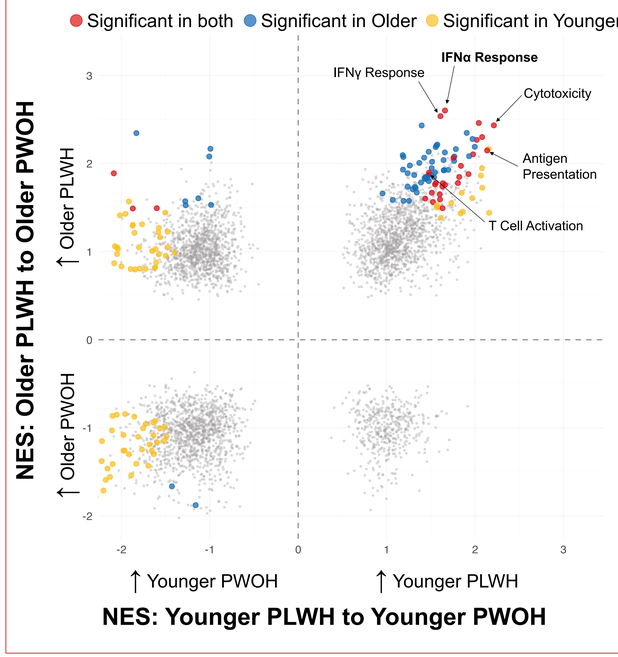
Age-related changes in CD4+ T cells are conserved in PLWH and PWOH

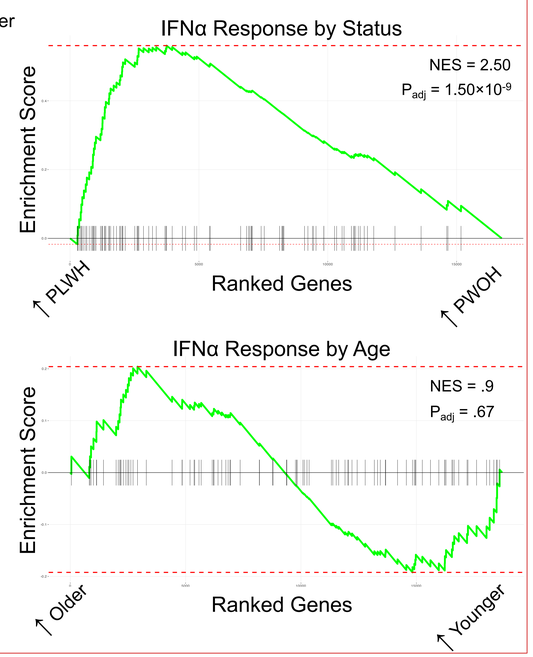






Inflammatory signatures are upregulated in PLWH regardless of age





CONCLUSIONS

- Similar changes occur with age in the CD4 T cells of PLWH and PWOH, including at the transcriptomic and immunophenotypic levels
- Signatures of chronic inflammation can be detected in older and younger PLWH, including several pathways that are also associated with aging
- The interferon alpha response is a pathway uniquely associated with chronic HIV regardless of age and represents a promising avenue for further research aimed at extending healthspan of PLWH

Plain language summary
ART has dramatically increased the life expectancy of PLWH, necessitating research aimed at learning how to best care for the aging population. Our results suggest that aging processes in immune cells are similar in PLWH and PWOH, but older and younger PLWH show signs of exacerbated inflammation compared to PWOH.