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Development of a HIV Latency Model in Primary Macrophages

The goal of this project is to develop a physiologically relevant primary macrophage HIV latency model, and investigate whether it can support multiomic analyses of HIV persistence, including HIV DNA and RNA with host gene expression at the single-cell level.

Why is HIV difficult to cure?

Antiretroviral therapy (ART) effectively suppresses HIV replication (RNA) but does not eliminate the virus (DNA).

HIV establishes latent reservoirs (HIV DNA) in long-lived cells, allowing the virus to remain hidden and rebound (RNA) if ART is discontinued or interrupted.

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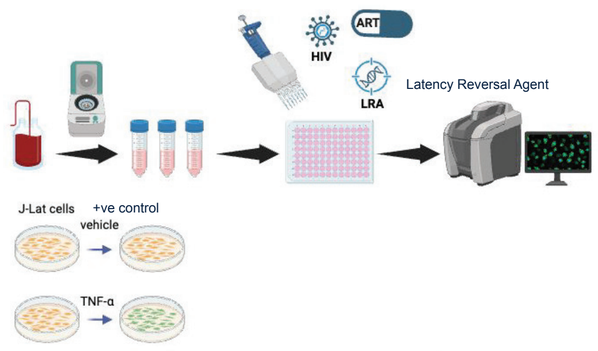
Why Study Macrophages?

- Most HIV latency research focuses on resting $CD4^+$ T cells.
- Macrophages are long-lived immune cells that can also harbor latent HIV, which can alter cellular function.

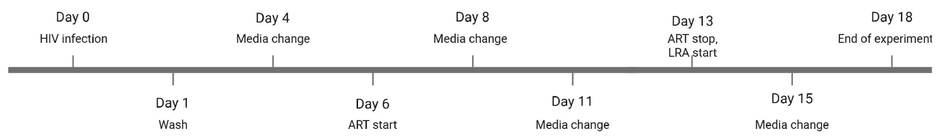
Penn Medicine 2

Experimental Design



Penn Medicine 3

Timeline of HIV infection



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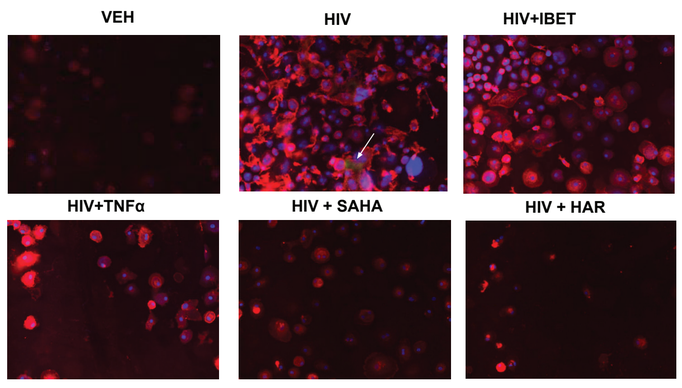
Images of Macrophages

LRAs: IBET, TNFα, SAHA, HAR



WGA DAPI P24

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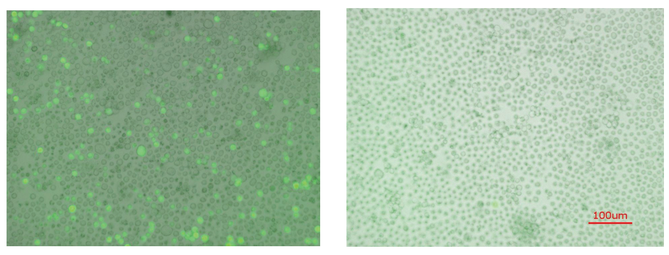
Positive control - J-Lat cells



with TNFα
HIV RNA

No TNFα

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