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Although significant progress in HIV-1 treatment has led to an increased life expectancy of people living with HIV (PLWH), finding a cure for HIV-1 infection remains a tremendous challenge. Current treatments reduce the viral load and improve the overall health of patients but fail to eradicate HIV-1 as the proviral DNA is present in cellular reservoirs, causing viral rebound when treatment is discontinued. Multiple strategies to cure HIV-1 infection are being explored. While Zeger Debyser (KU Leuven) has pioneered block-and-lock strategies to permanently silence HIV expression (2), Anna Kula-Pacurar (Jagiellonian University, Krakow, Poland) has elaborated on shock-and-kill approaches to eradicate HIV-1 infected cells (3). Heng-Chang Chen (The ŁUKASIEWICZ Research Network -Polish Center for Technology Development Poland) has pioneered barcoded virus based technology to correlate unique integration sites with transcriptional state of the provirus.

Within this project three partners will synergize on their combined expertise by exploring innovative strategies to functionally cure HIV.

To reach this ambitious goal specific objectives will be addressed:

1. To enhance the LEDGIN-based block-and-lock strategy using BRD4 modulators
2. To test block-and-shock combinations using LEDGINs and latency reversing agents
3. To study the selection of latent provirus in cell culture by either strategy