

# HIV RNA expression inhibitors may restore immune function in HIV-infected individuals

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HIV infecting a human cell. Credit: NIH

Immune activation and inflammation persist in the majority of treated

HIV-infected individuals and is associated with excess risk of mortality and morbidity. A new study by Boston University School of Medicine (BUSM) researchers suggests that use of HIV RNA expression inhibitors as adjunct therapy might diminish atypical inflammation and restore immune function in HIV-infected individuals on combination antiretroviral therapy (cART).

HIV-1-infected individuals have excess risk of developing non-AIDS complications such as cardiovascular atherosclerosis, neurocognitive dysfunctions, non-AIDS cancers, osteoporosis, and renal disorders. Systemic chronic immune activation has been postulated to lead to these non-AIDS complications.

Despite long-term viral suppression by cART, it has remained unclear how chronic inflammation is induced in HIV-infected individuals. In this study, BUSM researchers identified a mechanism of HIV-1-induced chronic immune activation and T cell dysfunction. In studies performed with primary human macrophages and T cells, they found that persistent infection of macrophages with HIV-1 and expression of intron-containing HIV-1 RNA alone even in the absence of infectious virus production lead to induction of type I interferon (IFN-I)-dependent pro-inflammatory responses and immune exhaustion of co-cultured T cells. They believe that these findings might provide an explanation for the observed chronic inflammation-associated morbidities in HIV-infected individuals who are on cART.

"We hope our study will broaden knowledge of host-HIV interactions and might help to reduce inflammation-associated disorders caused by [chronic viral infections](#)," said Rahm Gummuluru, Ph.D., corresponding author and associate professor of microbiology.

These findings appear online in the journal *Nature Communications*.

**More information:** Hisashi Akiyama et al, HIV-1 intron-containing RNA expression induces innate immune activation and T cell dysfunction, *Nature Communications* (2018). [DOI: 10.1038/s41467-018-05899-7](https://doi.org/10.1038/s41467-018-05899-7)

Provided by Boston University School of Medicine

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