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Step-by-step account of HIV-1 infection

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The mechanism by which human immunodeficiency virus type 1 (HIV-1) causes depletion of CD4+ T cells has until now remained largely unexplained. In the July [Genome Research](#), Jacques Corbeil and colleagues from the [University of California San Diego](#), describe the molecular events triggered by invasion of the HIV, creating a detailed account of the cellular injury that follows HIV infection.

Using microarray technology, Corbeil *et al.* measured the simultaneous mRNA expression, at eight distinct time points, of 6800 genes in a CD4+ T-cell line during the course of HIV infection. They found that responses to infection included a decrease in overall host cell mRNA synthesis, with the replacement of host cell mRNA by viral mRNA, a suppression of mitochondrial and DNA-repair gene transcripts and increased expression of the *p53*-induced pro-apoptotic gene *Bax* and its product, with activation of the apoptotic proteases caspases 2, 3 and 9 (*Genome Res* 2001, **11**:1802).

These findings indicate that the subversion of the cell's transcriptional machinery for the purpose of HIV-1 replication is similar to genotoxic stress and represents a major factor leading to HIV-induced apoptosis.

References

1. Corbeil J, Sheeter D, Genini D, Rought S, Leoni L, Du P, Ferguson M, Masys DR, Welsh JB, Fink JL, *et al.*: Temporal gene regulation during HIV-1 infection of human CD4+ T cells. *Genome Res* 2001, 11:1802., [<http://www.genome.org/cgi/content/abstract/GR-1802Rv1>]
2. University of California San Diego, [<http://www.ucsd.edu/>]