



Update

September 16, 1988

Sandy Hecker
301/496-5717

HIV Nef Protein Slows Viral Production

Researchers at the National Institute of Allergy and Infectious Diseases (NIAID) have shown for the first time that the protein product of an important AIDS virus gene called nef* slows viral gene expression, which reduces production of progeny viruses in infected cells. The Nef protein might foster latency, an important feature of HIV infection, by slowing viral replication in infected cells.

Drs. Nafees Ahmad and Sundararajan Venkatesan, Laboratory of Molecular Microbiology, NIAID, showed that HIV lacking a functional nef gene grew better in cells and killed them more quickly than did HIV with functional nef. When Nef was restored, the researchers found a proportionate decrease in viral replication. The greater the amount of nef added, the fewer viral particles were produced.

In another group of experiments, the researchers demonstrated that the Nef protein affects the Long Terminal Repeat (LTR), a genetic region of the AIDS virus that is responsible for activating the viral genes. This step is required to begin viral replication (production of more viral particles). Drs. Ahmad and Venkatesan further pinpointed the region within the LTR that responded to the Nef protein.

Other researchers have shown that the viral Nef protein is related to a class of cellular

* "nef" denotes the gene, "Nef" is used for the name of the protein

proteins produced by oncogenes, which control cell division and maturation. Thus, in addition to having an effect on HIV replication, Nef may modify or affect certain cellular proteins as well.

HIV is a challenge for researchers attempting to understand its complex functions in order to devise strategies to prevent or to fight HIV infection. The AIDS virus has at least nine genes that contain genetic instructions for viral function and structure. Researchers are just beginning to sort out the complex effects these gene products have on the genetic material of HIV and on the infected host cell over time, as well as how these effects alter the course of HIV infection.

The research team's findings are helping unravel the complicated process that determines how efficiently HIV replicates in cells. This has implications for understanding latency, or the apparent inactivity of HIV in some infected cells. Research data about this process provide knowledge critical to development of AIDS drugs and vaccines.

#

These data appeared in the September 16, 1988 SCIENCE, 241:1481-1485 in an article titled "Nef Protein of HIV-1 is a Transcriptional Repressor of HIV-1 LTR." The authors are Dr. Nafees Ahmad and Sundararajan Venkatesan, Laboratory of Molecular Microbiology, NIAID.