

Researchers determine structure of protein that mutates DNA of the AIDS virus HIV-1

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Understanding the structure of proteins involved in inhibiting HIV-1 infection could help in the battle against AIDS, and University of Minnesota researchers have taken a crucial step in that direction.

Hiroshi Matsuo, Ph.D., and Reuben Harris, Ph.D., co-investigators of the research and assistant professors in the Department of Biochemistry, Molecular Biology and Biophysics at the University of Minnesota have determined the structure of APOBEC3G – a protein that inhibits the AIDS virus, HIV. This discovery is the first to shed light on the atomic structure of the protein.

The research was released online Feb. 20, 2008 on the *Nature* web site and it will be featured in an upcoming print publication of the journal.

Proteins could be compared to miniature machines, each of which carries out a specific function. The APOBEC3G "machine" is capable of modifying HIV DNA so that the virus is no longer infectious.

HIV-1, however, has unfortunately developed a way to evade this potent cellular protein with its own protein called Vif, which literally triggers the destruction of APOBEC3G.

The discovery will help researchers manipulate APOBEC3G to make it effective in combating HIV. Current studies also will help develop methods to neutralize Vif before it has a chance to destroy the protein.

"This new information is a crucial step toward understanding how APOBEC3G and Vif talk to each other," Harris said. "Furthermore this new information will undoubtedly help researchers identify candidate drugs for future novel HIV-1/AIDS therapies."

Source: University of Minnesota

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