

New proteins inhibit HIV infection in cell cultures

Yale UniversityYale University

Yale Cancer Center scientists have developed a new class of proteins that inhibit HIV infection in cell cultures and may open the way to new strategies for treating and preventing infection by the virus that causes AIDS. The findings appear in the online edition of the Journal of Virology.

AIDS slowly weakens the immune system and allows life-threatening infections and cancers to thrive. The Yale team isolated six 43- and 44-amino acid proteins that inhibited cell-surface and total expression of an essential HIV receptor and blocked HIV infection in laboratory cell cultures.

The proteins were modeled after a protein from a papillomavirus that causes warts in cows. This bovine papillomavirus is related to the human papillomaviruses that cause cervical cancer and some head and neck cancers.

“We have constructed an entirely new class of proteins that inhibit HIV infection. These proteins do not occur in nature, so our findings suggest a radical new strategy to prevent AIDS,” said senior author Dr. Daniel DiMaio, deputy director of the Yale Cancer Center, and Waldemar Von Zedtwitz, professor of genetics at Yale School of Medicine. “If these proteins are found to be active in people, they may provide a way to prevent AIDS and its consequences, including cancer.”

Research on papillomaviruses began in the DiMaio laboratory almost 30 years ago, before the AIDS epidemic had emerged and the role of papillomaviruses in cancer was known.

“Of course, there are many hurdles to taking a laboratory finding like this into the clinic, but because these proteins dramatically inhibit HIV in cell culture, they should be evaluated further,” DiMaio explained.

Other authors are Richard A. Sutton, Elizabeth H. Scheideman, Sara A. Mariatt, Yanhua Xie, and Yani Hu, all of Yale.

Support for the project was provided by the National Cancer Institute (CA37157); the National Institute of Allergy and Infectious Diseases (AI067034); the American Cancer Society (PF-11-273-01-TBE); the James Hudson Brown-Alexander Brown Coxe Foundation; and the National Institutes of Health (T32 GM007499). This work was also supported by a donation to Yale Cancer Center by Laurel Schwartz.

Yale Cancer Center is one of a select network of 41 comprehensive cancer centers in the country designated by the National Cancer Institute and the only one in Southern New England. Bringing together the resources of Smilow Cancer Hospital at Yale-New Haven and Yale School of Medicine, its mission encompasses patient care, research, cancer prevention and control, community outreach and education.

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Published on Electronic Component News (<http://www.ecnmag.com>)

Source URL (retrieved on 07/26/2014 - 12:47pm):

http://www.ecnmag.com/news/2012/07/new-proteins-inhibit-hiv-infection-cell-cultures?qt-most_popular=0&qt-video_of_the_day=0