

# defense molecules in mouth found to inhibit infections from HIV

June 29 2009

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A professor from the Case Western Reserve University School of Dental Medicine has discovered defense molecules found in the mouth inhibit infections from HIV.

Now he and a team of 22 researchers will determine why HIV-infected humans receiving the class of drugs referred to as highly active anti-retroviral therapy (HAART) have increased incidence of oral complications—such as a quadrupled rate of contracting [human papillomavirus](#) (HPV).

HPV, which can lead to cancer and increased infections, is more frequently associated with the genital tract and is now being seen in the mouth.

Aaron Weinberg, professor and chair of the department of biological sciences at the Case Western Reserve dental school, has received a five-year, \$9.5 million grant from the National Institutes of Health's National Institute for Dental and Craniofacial Research to unravel changes in the innate immune systems of HIV-infected people on antiretroviral therapies.

“What is resolving one problem is setting off another,” says Weinberg. “However, outcomes of our studies should help us better understand how the lining of our mouth and other parts of our body, like the skin, protect us from microbes that make us sick—and why some people are better protected than others.”

The new study builds on seven years of previous research in which Weinberg and his colleagues discovered that human beta defensins (hBDs), frontline innate defense molecules found in epithelial cell linings in the mouth, inhibit infections from [HIV](#).

“Discovering how this pathology occurs in the mouth, may offer the potential for understanding how similar complications arise in other body sites,” Weinberg said.

Through the four research projects funded by the grant, researchers will examine innate defense molecules in the skin and urogenital track as well as the mouth.

“New evidence surfaces repeatedly that [oral health](#) plays an important and integral role in general health,” says Jerold Goldberg, dean of the Case Western Reserve School of Dental Medicine. “The award from the NIH demonstrates the importance of working across disciplines and professions to answer complex questions.”

In two projects, researchers will design, produce and share altered forms of beta defensins to study molecular interactions between the defensins and key receptors on human cells previously identified as important for bolstering innate defenses.

In the third and fourth projects, researchers will identify altered proteins in human epithelial cells from HIV-infected individuals on HAART, compare tissue samples from warts associated with HIV-positive (on HAART) and normal individuals and find genetic differences between subjects.

Along with Weinberg, project leaders will be the Case Western Reserve School of Medicine’s Scott Sieg, department of medicine, and Tom McCormick, department of dermatology, and the School of Dental

Medicine's Richard Jurevic, department of biological sciences.

The team also is working with Mark Chance, professor and director of the Case Western Reserve Center for Proteomics and Bioinformatics, and Santosh Ghosh, a postdoctoral fellow in the department of biological sciences at the dental school.

Provided by Case Western Reserve University ([news](#) : [web](#))

Citation: defense molecules in mouth found to inhibit infections from HIV (2009, June 29)  
retrieved 10 April 2024 from  
<https://medicalxpress.com/news/2009-06-defense-molecules-mouth-inhibit-infections.html>

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