

New vaccine developed for preventing 'uncommon cold' virus

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Common colds typically cause a week of sneezing, aches and pains and then fade away leaving only a sore nose and a few used sick days behind. But what if that cold turned out to be something more?

Human adenovirus type-3 is known as the "uncommon cold" because the infection's symptoms—runny nose, sore throat, cough and fever—are eerily similar to those of the common cold which is caused by the rhinovirus. The difference is that, unlike the common cold, the symptoms of the uncommon cold are typically much more severe and can even be fatal.

Adenovirus-3 thrives in nations with dense urban populations and has recently become prevalent in southern China and neighboring countries. It may also emerge in less likely locales with dense populations, such as schools, health care facilities and military training bases in the U.S.

Determined to stamp out this devastating infection, researchers from George Mason University, the University of Hong Kong, Guangzhou Children's Hospital, the South China Institute of Technology and the Graduate School of Chinese Academy of Sciences have developed a DNA-based vaccine that has effectively protected mice from the infection.

Their findings will appear in the February 18, 2009 print edition of the journal *Vaccine* and are currently [available online](#).

"Further study is required, but we hope that in the future, this simple, stable and inexpensive vaccine can be mass-produced and made available to susceptible populations," says Donald Seto, associate professor in George Mason University's Department of Bioinformatics and Computational Biology, the only U.S.-based researcher involved in the study. "Affordability is a key factor since these regions are generally economically depressed."

According to the Centers for Disease Control and Prevention (CDC), the human adenovirus was first seen in the 1950s and is associated with a wide spectrum of illnesses including conjunctivitis, upper respiratory infections, pneumonia and gastrointestinal disease. More than 50 unique serotypes of the virus have been identified, with even more expected to be isolated.

Adenovirus outbreaks are difficult to control because the virus can live for weeks on environmental surfaces and spreads quickly through direct contact, aerosol and contaminated drinking water.

Although the disease is relatively rare in the U.S., CDC records indicate that it has made several appearances here with devastating results. In 2000, four children died during an outbreak of adenovirus type-7 that occurred at a long-term care facility in Iowa, and nine patients died when adenovirus type-14 appeared as epidemics in Oregon, Texas and Washington in 2007.

Seto hopes that this new vaccine will serve as a model that allows his team to target the remaining strains of the virus.

"The immediate impact is the production and distribution of a low-cost, stable vaccine for adenovirus-3," says Seto. "The outstanding question is, if all of the strains are so similar, why are they restricted to certain tissues, like only the eyes or the respiratory tract? That's what we'll try to

figure out next."

Source: George Mason University

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