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New vaccine research targets HIV in the slower, early stage of infection

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New research at Oregon Health & Science University's Vaccine and Gene Therapy Institute suggests vaccines that specifically target HIV in the initial stages of infection before it becomes a rapidly replicating, system-wide infection - may be a successful approach in limiting the spread of the disease. The research is published in the early online edition of the journal *Nature Medicine* and will appear in a future printed edition.

The researchers used a vaccination method that involves creating and maintaining resistance by programming a portion of the body's immune system - effector memory T-cells - to look out for HIV at the site of infection.

"HIV appears to be vulnerable when it is first introduced into mucosal surfaces in the body," said Louis Picker, M.D., associate director of the OHSU VGTI and director of the VGTI's vaccine program. "However, once HIV spreads throughout the entire body, it replicates very rapidly and becomes difficult if not impossible to control. Our approach is to attack during this early period of vulnerability. The approach is similar to that of a homeowner who sprays their house with water before sparks land on the roof. This approach can prevent the roof from catching fire and, in the case of HIV, prevent the spread of the virus."

To determine whether they could proactively "educate" the immune system, scientists used a monkey model of AIDS - simian immunodeficiency virus (SIV) - the monkey counterpart to HIV. They

introduced an altered monkey form of cytomegalovirus (CMV) programmed to express SIV proteins and trigger specialized effector memory T-cells to look for and attack SIV in its early stages.

In total, 12 rhesus macaque monkeys at the Oregon National Primate Research Center were vaccinated using this method. When the animals were later infected with SIV, one-third were protected.

The next step for the research team is to try to determine why only a portion of the monkeys who are vaccinated using this method are responding. The researchers also hope to expand the number of subjects to better determine the success rate of the therapy.

Source: Oregon Health & Science University