Scientists find human cell that provokes immune response against HIV

Posted: Mar 24, 2016 3:48 PM PDTUpdated: Mar 24, 2016 3:48 PM PDT

LA JOLLA (CNS) - The Scripps Research Institute reported Thursday that its scientists have found a common type of cell in humans that can be used to provoke an immune response against HIV.

The discovery could help in the development of a vaccine capable of inducing the types of antibodies needed to prevent HIV infection, according to TSRI. The study, which included work from the International AIDS Vaccine Initiative and the La Jolla Institute for Allergy and Immunology, is set to be published Friday in the journal Science.

TSRI said an emerging vaccine strategy involves immunizing people with a series of different engineered HIV proteins to teach the immune system to produce broadly neutralizing antibodies against HIV.

Success depends on the ability of the proteins to bind and activate special cells, known as broadly neutralizing antibody "precursor" B cells, which have the potential to develop into broadly neutralizing antibody "producing" B cells."

"We found that almost everybody has these broadly neutralizing antibody precursors, and that a precisely engineered protein can bind to these cells that have potential to develop into HIV broadly neutralizing antibody-producing cells, even in the presence of competition from other immune cells," said William Schief, a TSRI professor and director of Vaccine Design of the IAVI Neutralizing Antibody Center.

The scientists said the immune system contains a large pool of various precursor B cells so it can respond to a wide variety of diseases. But that also means that precursor B cells able to recognize a specific feature on a virus surface are exceedingly rare, they said.

The finding is expected to provide insights into an upcoming clinical trial of a nanoparticle version of an engineered HIV vaccine protein that produced antibody responses in mice that showed some of the traits necessary to recognize and inhibit HIV, according to TSRI.

Funding for the research was provided by the International AIDS Vaccine Initiative Neutralizing Antibody Consortium and Center; the Ragon Institute of Massachusetts General Hospital, Massachusetts Institute of Technology and Harvard; the Bayer Science and Education Foundation; Helen Hay Whitney Foundation; Howard Hughes Medical Institute; Bill & Melinda Gates Foundation; and the National Institute of Allergy and Infectious Diseases.