

Are We Really 'Close' to an HIV Vaccine?



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The media is abuzz after a study <u>published in the journal Science</u> brings news that scientists have been able to identify a potential precursor to triggering our own bodies into fighting HIV.

HIV is a tough virus to fight because it prevents our immune systems from combating it. Still, for a while now scientists have observed that some people infected with the main HIV-1 strain appear to develop what this study terms "heavily mutated, broadly neutralizing antibodies (bNAbs)" that can target HIV.

<u>Trials using these antibodies in mice models</u>* have shown that this kind of approach could potentially be effective in humans, but until now trials have not ascertained whether, broadly speaking, this immune response would be possible as the basis of a HIV-1 vaccine.

The researchers in this latest trial say, in general terms, that they have been able to engineer an <u>immunogen</u>, or a way to get an immune response, from HIV negative people that creates the precursor cells to a certain class of those broad neutralizing antibodies. The human body has a big pool of different B cells, and they are they are capable of recognizing specific threats and neutralizing them. The researchers, who are primarily from The Scripps Research Institute (TSRI), La Jolla Institute for Allergy and Immunology and International AIDS Vaccine Initiative (IAVI), say that the precursor cells they were able to generate are present in nearly everyone, and so would be a good candidate for forming the basis of a vaccine.

"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," William Schief, of the IAVI Neutralizing Antibody Center at TSRI, is quoted as saying.

This is by no means the first time that such efforts have been made. Researchers have been trialing different proteins for some time now to see if they can find the right combination to provoke the body into effectively fighting HIV. Indeed, <u>researchers in South Africa are</u> <u>currently waiting for approval</u> to move forward on a trial of a vaccine that would involve 7,000 people, but are awaiting the results of a smaller scale trial. It is currently the only potential vaccine at this stage of investigation, and so represents a significant point of interest. The vaccine isn't particularly potent but researchers have tried to modify it in order to up its effectiveness, and its potency will be key to whether it becomes available on the market.

The research being reported on in this latest investigation however gives a concrete way for a potentially more effective vaccine. At the very least the trial, even without human clinical trials, has shown that utilizing bNAbs could work and could be important for moving forward in future trials.

If you're thinking all this sounds great but, at the same time, there's a lot of work left to be done-you'd be right. While the media reports may have framed this in ways that suggest a vaccine has now been found, that is not what is reported in this investigation. Indeed, the *Science* article carries the headline "Baby steps toward bNAbs." It's important to keep that in mind when looking at this research and, while ignoring the sensationalism can be hard, understand that this will be a process that will still take years.

That said, there is currently a planned Phase 1 clinical trial, where researchers test a new drug on a small group of people, to see if a HIV vaccine protein might work. This latest study could help better shape that Phase 1 trial for the vaccine.

Study co-author Shane Crotty, professor at the La Jolla Institute, is quoted as saying:

"The goal of the clinical study will be to test safety and the ability of this engineered protein to elicit the desired immune response in humans that would look like the start of broadly neutralizing antibody development. Data from this new study was also important for designing the clinical trial, including the size and the methods of analysis." The study also gives scientists a means to assess other HIV vaccine protein candidates, providing an important tool going forward in HIV research that very well could lead to a vaccine far quicker than otherwise might have happened. As such, even if it's not the ultimate answer that some media reports seem to be suggesting, this research is certainly worth talking about and is a significant step in the right direction for creating that very much needed HIV vaccine.

*Care2 does not endorse animal trials and <u>advocates</u> for using other technologies and techniques that do not involve breeding and subjecting animals to harm.

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