



Fall 10-6-2018

## Science in the News - Rare Antibodies Show Scientists How to Neutralize the Many Types of Ebola

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### Recommended Citation

Trinh, Cynthia, "Science in the News - Rare Antibodies Show Scientists How to Neutralize the Many Types of Ebola" (2018). *CHEM151*. 9.

<https://scholarlycommons.pacific.edu/biochem/9>

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Biochemistry: Science in the News #2

6 October 2018

Rare Antibodies Show Scientists How to Neutralize the Many Types of Ebola  
<https://www.scripps.edu/news-and-events/press-room/2018/20180912-ebola-antibody-therapy.html>

The Ebola virus, a rare, but deadly disease, was first discovered in 1975 near the Ebola River, which is now the Democratic Republic of Congo, and had recent outbreaks the past few years. The Ebola virus has no approved vaccines or treatments, however, there are researches that are focusing on discovering the virus's natural host, developing vaccines, and discovering therapies to improve treatment of the disease. Developing a vaccine or finding a treatment for this disease is challenging, since the Ebola virus is not just one pathogen, but five; the disease is caused by an infection group of viruses within the genus *Ebolavirus* (Ebola, Sudan, Tai Forest, Bundibugyo and Reston viruses).

In this news article, two new studies done by scientists at Scripps Research have discovered a weak spot in the Ebola virus and other closely related pathogens that can be targeted by a human antibody known as ADI-15878, which was found in the blood of an Ebola virus survivor. It is also the only human antibody found that neutralizes all five members of the *Ebolavirus* genus. For their research, the scientists used X-ray crystallography to see the interactions between the ADI-15878 antibody with Ebola's glycoprotein. Ebola's glycoprotein (protein that allows a virus to infect a cell), is covered in sugars that mask the virus from being detected by the body's immune system. They hypothesized that locking the Ebola's fusion machinery will make it impossible for the virus to infect the human cells and the fusion loop of the virus cannot be easily mutated, which meant that having an antibody that can target that structure would provide broad protection from the virus. They soon discovered that the ADI-15878 antibody binds to a site on the viral fusion loop, which prevents the fusion of the virus to the human cell and initiates infection. The scientists had also tested this idea with a mouse antibody known as 6D6, to a mouse who was immunized with Ebola virus and the Sudan virus. Both the 6D6 antibody and the ADI-15878 antibody bound to the same region and neutralized the known types of Ebola.

I had chosen this article, since the topic of treatment to diseases has always been an interest of mine. This article was also related to what we had learned in class about how antibodies were starting to be used as treatment options in certain diseases.

## Citations

“Ebola (Ebola Virus Disease).” *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 18 Sept. 2018, [www.cdc.gov/vhf/ebola/about.html](http://www.cdc.gov/vhf/ebola/about.html).

“Rare Antibodies Show Scientists How to Neutralize the Many Types of Ebola.” *TSRI - News & Views*, 12 Sept. 2018, [www.scripps.edu/news-and-events/press-room/2018/20180912-ebola-antibody-therapy.html](http://www.scripps.edu/news-and-events/press-room/2018/20180912-ebola-antibody-therapy.html).

Shrourou, Alina. “Rare Antibodies Could Be Key Ingredients in Therapeutics Capable of Neutralizing Many Ebola Types.” *News-Medical.net*, News Medical, 13 Sept. 2018, [www.news-medical.net/news/20180913/Rare-antibodies-could-be-key-ingredients-in-therapeutics-capable-of-neutralizing-many-Ebola-types.aspx](http://www.news-medical.net/news/20180913/Rare-antibodies-could-be-key-ingredients-in-therapeutics-capable-of-neutralizing-many-Ebola-types.aspx).

West, Brandyn R., et al. “Structural Basis of Pan-Ebolavirus Neutralization by a Human Antibody against a Conserved, Yet Cryptic Epitope.” *MBio*, American Society for Microbiology, 7 Nov. 2018, [mbio.asm.org/content/9/5/e01674-18](http://mbio.asm.org/content/9/5/e01674-18).