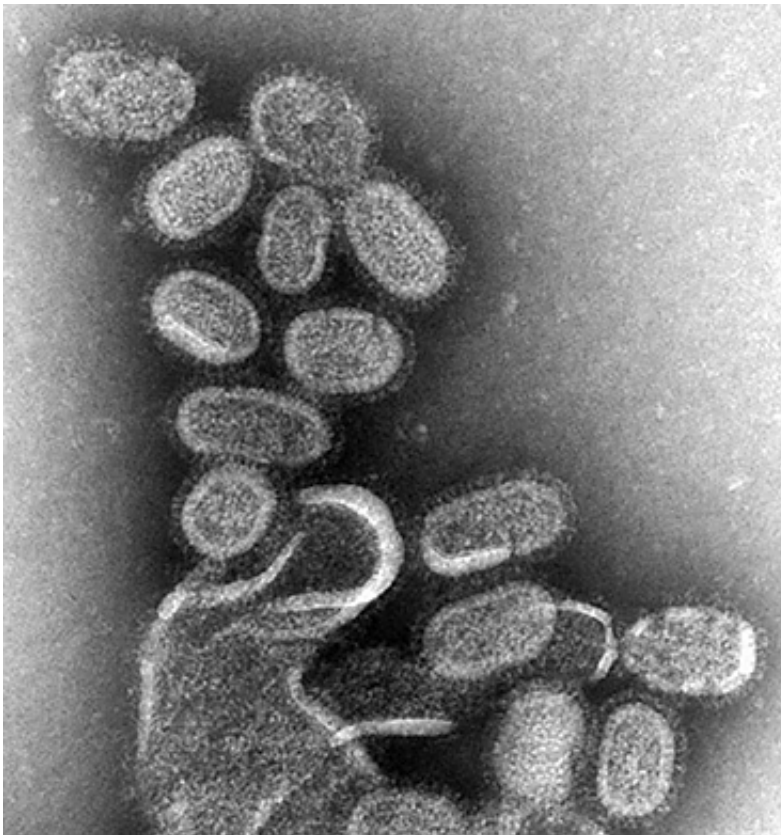


Four-in-one antibody used to fight flu shows promise in mice

November 2 2018, by Bob Yirka



Electron microscopy of influenza virus. Credit: CDC

A large international team of researchers has developed a four-in-one antibody approach to fighting influenza infections. In their paper published in the journal *Science*, the group describes the development of the antibody and how well it worked in test mice.

Despite a lot of research by scientists over many years, influenza continues to infect people around the globe. In addition to missed work days and the misery it causes victims, it kills approximately half a million people every year. The current [approach](#) to limiting the number of people stricken is to create seasonal vaccines annually and to vaccinate as many people as possible. While effective for many people, vaccines do not work as well among the most vulnerable—the elderly. They also only offer protection for one type of flu. For that reason, scientists continue to look for a better approach. In this new effort, the researchers sought to create an antibody that would be effective against multiple types of flu—one that would hopefully offer protection over the course of an entire flu season.

The team started with prior research showing that llamas produce a unique type of antibody that is able to attach to more vulnerable parts of [influenza viruses](#). They injected [test](#) llamas with vaccines that had three different kinds of disabled flu viruses. The vaccine also had a viral surface protein from two other types of flu. Then, once the llamas had produced [antibodies](#) to the newly introduced viruses, the researchers harvested them—four types in all. Next, they engineered a gene that expresses a protein composed of nanobodies derived from the four antibodies in the llamas. The final step was splicing the engineered gene into a benign [virus](#).

To test their approach, the researchers created a nasal spray that launched the loaded virus into the nasal cavities of test mice and then tried to infect the mice with 59 different types of flu that infect people. They report that the mega-antibody was successful in warding off every single virus strain tested.

More testing is required, and it is still not clear if the four-in-one antibody might be seen as an enemy by the human immune system—but at this point, the researchers are optimistic about their approach making

its way into use before the next pandemic strikes.

More information: Nick S. Laursen et al. Universal protection against influenza infection by a multidomain antibody to influenza hemagglutinin, *Science* (2018). [DOI: 10.1126/science.aag0620](https://doi.org/10.1126/science.aag0620)

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