



## Fauci: Duke Vaccine Platform Paves Way For Pan-Coronavirus Vaccine

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National Institutes of Allergy and Infectious Diseases Director Anthony Fauci on Thursday (May 13) touted a potential new vaccine developed by the Duke Human Vaccine Institute that he says provides evidence it's possible to develop a universal vaccine that protects against current coronaviruses and future pre-emergent coronaviruses. He said government researchers are vigorously chasing the technology.

"This is an extremely important proof of concept that we will be aggressively pursuing as we get into the development of human trials," Fauci said during a White House COVID-19 press briefing on Thursday.

The idea of a universal, or pan-coronavirus, vaccine has been widely discussed, and there have been a number of efforts to use different types of vaccine platforms, Fauci said. But the Duke findings, which were published May 10 in the journal *Nature*, provide what Fauci described as a potentially exciting proof of concept that there's potential for a vaccine platform that protects against current and emerging betacoronaviruses (betaCoVs), including those that caused the severe acute respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS) outbreaks and the SARS-CoV-2 pandemic.

As part of their study, a team of Duke University researchers, led by Kevin Saunders, found that a person who had been infected with SARS developed antibodies capable of neutralizing multiple coronaviruses.

The Achilles heel for coronaviruses is their receptor-binding domain, which is located on the spike that links the viruses to receptors in human cells, [the Duke Human Vaccine Institute says in its May 10 press release](#). While the binding site enables the virus to enter the body and cause infection, it can also be targeted by antibodies.

The Duke research team identified one particular receptor-binding domain site that is present on SARS-CoV-2, its circulating variants and SARS-related bat viruses that makes them highly vulnerable to cross-neutralizing antibodies.

Investigators then designed a nanoparticle vaccine that displays the vulnerable domain site. The nanoparticle was combined with a small-molecule adjuvant, developed by 3M and the Infectious Disease Research Institute, to boost the body's immune response.

**In tests of its effect on monkeys, the nanoparticle vaccine blocked COVID-19 infection by 100%.** The new vaccine also elicited significantly higher neutralizing levels in the animals than current vaccine platforms or natural infection in humans, Duke says.

"We found that not only did that increase the body's ability to inhibit the virus from causing infection, but it also targets this cross-reactive site of vulnerability on the spike protein more frequently," Saunders said. "We think that's why this vaccine is effective against SARS-CoV-1, SARS-CoV-2 and at least four of its common variants, plus additional animal coronaviruses."

The findings, Fauci said on Thursday, strongly suggest that a pan-coronavirus vaccine might be possible.

**For years, federal officials have been eyeing ways to boost development of universal vaccines, namely for the flu, including by promoting uptake of existing, faster vaccine development platforms, as well as providing incentives for vaccines that are produced domestically.**

Recently, [Democratic Sen. Edward Markey \(MA\) reintroduced legislation](#) that would give \$1 billion over a period of four fiscal years to NIAID to research a universal coronavirus vaccine. Markey's bill would authorize \$1 billion -- \$250 million for each of fiscal years 2021 through 2024 -- for NIAID to conduct or support comprehensive research for the creation of a universal vaccine that could address current and future coronavirus diseases, including COVID-19, SARS and MERS. -- *Beth Wang* ([bwang@jwpnews.com](mailto:bwang@jwpnews.com))

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