

# U.S. Army reports progress on COVID vaccine that fights all variants

December 22 2021, by Dennis Thompson

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The U.S. Army says it has developed a COVID-19 vaccine it believes

could work against any and all coronavirus variants, including Omicron.

Results from early human trials of the Spike Ferritin Nanoparticle (SpFN) COVID vaccine are expected by the end of the month, the Army added.

Lab studies have already shown that the new vaccine protects monkeys from the original strain of COVID-19, and induces highly potent antibody responses against the major variants of concern that have emerged during the pandemic, claims a report published last week in the journal *Science Translational Medicine*.

The upcoming results from [phase I human trials](#), which started in April 2021 and aimed to include a total of 72 people, will show whether the effectiveness observed in monkeys carried over into humans, the researchers said.

"Our strategy has been to develop a 'pan-coronavirus' vaccine technology that could potentially offer safe, effective and durable protection against multiple coronavirus strains and species," Dr. Kayvon Modjarrad, co-inventor of the vaccine and director of the Emerging Infectious Diseases Branch at the Walter Reed Army Institute of Research, said in an Army [news release](#).

The SpFN vaccine uses a protein shaped like a soccer ball, according to an article in the national security news site [Defense One](#).

Each of the molecule's 24 [different faces](#) could carry a different spike protein drawn from unique COVID variants, creating a broad immune response against the coronavirus, *Defense One* reports. The spike protein is what COVID-19 uses to infect cells.

"This vaccine stands out in the COVID-19 vaccine landscape,"

Modjarrad said. "The repetitive and ordered display of the coronavirus spike protein on a multifaced nanoparticle may stimulate immunity in such a way as to translate into significantly broader protection."

The Army news comes on the heels of an editorial co-written by Dr. Anthony Fauci in the *New England Journal of Medicine* calling for renewed research into a universal vaccine against coronavirus. In the last 20 years, the world has seen four deadly coronavirus outbreaks, including two bouts with SARS in the early 2000s, the emergence of MERS (Middle East respiratory syndrome) in 2012 and now COVID-19, which has killed more than 800,000 Americans, the authors of the editorial argue.

The Army vaccine follows one potential path to creating such a vaccine by targeting multiple sites on the spike proteins drawn from different COVID-19 variants, said lead editorial author Dr. David Morens, a senior scientific advisor to Fauci at the U.S. National Institute of Allergy and Infectious Diseases.

A universal vaccine might need to attack many different places in the COVID coronavirus beyond just the spike protein, however—what Morens called the "[body parts](#) of the virus."

"You want to make an immune response to all of the body parts, not just one body part," Morens said.

The most important targets would be ones that are "conserved"—a scientific term referring to parts of the virus that stay the same throughout a series of mutations that affect other parts, explained Dr. William Schaffner, medical director of the National Foundation for Infectious Diseases.

"You look for what people might call a common denominator that's

present in all the viruses, and can we create an immune system that can seek out that common part and thus prevent many infections," Schaffner said.

Research into a [universal vaccine](#) also could involve multiple doses of an effective vaccine, or the creation of substances that would prompt a stronger immune response to a vaccine, Morens added.

It's difficult to create any [vaccine](#), let alone a universal one, to fight a respiratory virus like COVID or the flu, Schaffner noted.

"Ideally, what we would like to do is prevent them from even getting a foothold in the body. But as they enter the body, they enter the cells of the respiratory system and begin their infection with the cells that are in the mucous membranes of the nose and back in the throat," Schaffner said.

"That makes it hard for the antibodies that are circulating in the bloodstream to get to them right away. It's almost as though the infection has to get established, and then when the virus tries to move throughout the body, that's when the antibodies glom onto them," he explained.

Schaffner said that it's encouraging that U.S. National Institutes of Health (NIH) bigwigs like Fauci and Morens wrote the *NEJM* editorial, because that indicates a willingness to put government money where their mouths are.

"I love it that Tony himself was part of that editorial, because I think that will mean NIH funding will be out there to stimulate this kind of research in our laboratories here in the U.S. and around the world," Schaffner said.

**More information:** The U.S. Army has more about its [Spike Ferritin](#)

[Nanoparticle \(SpFN\) COVID vaccine.](#)

M. Gordon Joyce et al, A SARS-CoV-2 ferritin nanoparticle vaccine elicits protective immune responses in nonhuman primates, *Science Translational Medicine* (2021). [DOI: 10.1126/scitranslmed.abi5735](https://doi.org/10.1126/scitranslmed.abi5735)

David M. Morens et al, Universal Coronavirus Vaccines—An Urgent Need, *New England Journal of Medicine* (2021). [DOI: 10.1056/NEJMp2118468](https://doi.org/10.1056/NEJMp2118468)

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