

We've Got The Vaccine, Says Pentagon-Funded Company

By Patrick Tucker

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A Canadian company says that it has produced a COVID-19 vaccine just 20 days after receiving the coronavirus's genetic sequence, using a unique technology that they soon hope to submit for FDA approval.

Medicago CEO Bruce Clark said his company could produce as many as 10 million doses a month. If regulatory hurdles can be cleared, he said in a Thursday interview, the vaccine could start to become available in November 2021.

An Israeli research lab has also claimed to have created a vaccine. But Clark says his company's technique, which has already been proven effective in producing vaccines for seasonal flu, is more reliable and easier to scale.

"There are a couple of others who are claiming that they have — well, we will call them vaccine[s]" for COVID-19, he said. "But they're different technologies. Some are RNA- or DNA-based vaccines that have not yet been proven in any indication yet, let alone this one. Hopefully, they'll be successful."

How did Clark's team create one so quickly? They use plants, not chicken eggs, as a bioreactor for growing vaccine proteins.

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Traditional vaccine production requires eggs, a lot of them. Vaccine manufacturers inject the virus into the eggs, where it propagates. But using eggs is expensive, takes a long time, and is far from perfect. Mutations can yield vaccines that don't match up to the virus they aim to shut down, Clark said

So Medicago doesn't work with a live virus. Instead, it uses plants, a relatively new approach that has seen much advancement in the past decade. It inserts a genetic sequence into agrobacterium, a soil bacteria, which is taken up by plants — in this case, a close cousin to tobacco. The plant begins to produce the protein that can then be used as a vaccine. If the virus begins to mutate, as is expected for COVID-19, they can just update the production using new plants.

"That's the difference between us" and egg-based methods, he said, "we go directly to producing the vaccine or the antibody without having to propagate the virus."

Using plants and genetically engineered agrobacteria works faster than eggs also makes the vaccine much easier to produce at scale, which, in part, is why the U.S. military has invested in the company.

In 2010, the Defense Advanced Research Projects Agency, or DARPA, put together a \$100 million program dubbed Blue Angel to look into new forms of vaccine discovery and production. A big chunk of that money went to Medicigo to build a facility in North Carolina, where they showed that they could find a vaccine in just 20 days, then rapidly scale up production.

Clark says that once they get the green light, they will be able to produce 10 million vaccine doses a month.

He said the only obstacles at this point are regulatory. The company's technique isn't yet FDA-approved and would need to go through clinical trials.

"Our basic plan is to be in human studies, phase one, by the July time frame; and then, it would depend, quite extensively, on the decisions the regulators make in terms of the hurdles they want us to have in the normal course of development," he said.

Clark says that he understands that cutting corners in drug development invites risk. But, he says, "There's a lot of room for negotiation with the regulators. I won't put words in their mouths...I will say our intention, taking a very standard approach, is that by November [of 2021] we will have completed phase III," in clinical trials — allowing the vaccine to be made widely available to the public.

Also on Thursday, Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Disease at the National Institutes of Health, told the U.S. House Oversight and Reform Committee that human trials for a vaccine (he did not specify the manufacturer) would be possible "within a few weeks." However, he said that a vaccine would not be available to the broader public for another 12 to 18 months.

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By Patrick Tucker // Patrick Tucker is technology editor for Defense One. He's also the author of [The Naked Future: What Happens in a World That Anticipates Your Every Move? \(Current, 2014\)](#). Previously, Tucker was deputy editor for *The Futurist* for nine years. Tucker has written about emerging technology in *Slate*, *The Sun*, *MIT Technology Review*, *Wilson Quarterly*, *The American Legion Magazine*, *BBC News Magazine*, *Utne Reader*, and elsewhere.

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