

COVID-19 Intranasal Vaccine Candidate Produces Robust Immune Response

The live-attenuated vaccine aims to produce an immune response to the entire virus rather than the frequently mutating spike protein.

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At a Glance

- A live-attenuated COVID-19 vaccine candidate that uses a nonpathogenic form of the virus and is administered by nose produces a significant immune response to multiple strains and variants, according to new phase 1 clinical trial data.
- The study findings highlight the potential of next-generation COVID-19 vaccines in protecting against possible infection and transmission.
- Experts say the vaccine used as a primary method of protection could increase access and uptake in undervaccinated areas of the world.

Two doses of a live-attenuated COVID-19 vaccine candidate produce a broad cellular immune response when administered intranasally, according to research presented at [IDWeek 2023](#).

The data come from a Phase I placebo-controlled clinical trial evaluating the safety and immunogenicity of CoviLiv, a novel COVID-19 vaccine candidate synthetically engineered by Codagenix Inc. Data show that participants who received two doses of 5×10^6 PFU of CoviLiv showed robust induction of both humoral and cellular immune responses. T-cell reactivity was demonstrated to be specific for multiple viral antigens beyond the frequently mutating spike protein.

The first-in-human trial ([NCT04619628](#)) is a primary vaccination series study conducted on healthy adults prior to the development of mRNA vaccines that are now approved for broad public use, including in the United States.

The study authors say that the live-attenuated COVID-19 vaccine designed using the Codagenix platform technology recodes the genetic material of the virus, converting it from a disease-causing

pathogen into a stable and safe, live-attenuated vaccine. The vaccine aims to produce an immune response to the entire virus rather than the frequently mutating spike protein, which could create a higher-quality immune response and potentially provide broader protection against variants. There are currently no live-attenuated or intranasal vaccines approved for public use against COVID-19.

“The study findings provide a glimpse into what could be the next generation of COVID-19 vaccines that provide differentiated protection to more people,” said Johanna Kaufmann, PhD, executive vice president for oncology and immunology at Codagenix Inc. and lead study author. “Vaccine administration by nose and easier storage can increase access to vaccinations for underserved areas across the world.”

CoviLiv does not require cold chain storage, making it easier to stockpile in areas that currently lack access to adequate refrigeration for vaccines. Intranasal administration provides an alternative to intravenous vaccines, which experts say could promote greater uptake in areas with lower vaccination rates.

In addition to Dr. Kaufmann, study authors include: Keri Wyllie, MPA; Yiwen Zhao, PhD; Lasmy Tea, MS, MPH; Sybil Tasker, MD, MPH, FIDSA; Leena Yeolekar, PhD; Rajeev Dhere, PhD; and Steffen Mueller, PhD.

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