

CHIMPANZEE ADENOVIRUS-BASED VACCINE FOR COVID-19

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Technology Description

Researchers at Washington University in St. Louis have developed a chimpanzee adenovirus-based vaccine for COVID-19. COVID-19, the clinical syndrome caused by SARS-CoV-2 infection, has had extensive morbidity and mortality impacts and destabilized society. There is an urgent need for a vaccine to mitigate the severity of infection, curb transmission, and end the pandemic. To help meet this need the inventors developed a chimpanzee adenovirus-based vaccine (ChAd-S-ST). The vaccine encodes a transmembrane form SARS-CoV-2 spike protein with mutations that stabilize the spike in a pre-membrane fusion conformation. Further, the chimpanzee adenovirus vector was used to avoid potential immunological complications that can occur with human adenovirus vectors. In studies with mice expressing the human ACE2 receptor, a single dose of the vaccine conferred protection against viral infection, inflammation, and clinical disease after SARS-CoV-2 challenge. This technology provides a promising vaccine candidate to combat the SARS-CoV-2 pandemic.

Stage of Research

Using mice expressing the human ACE2 receptor, the inventors showed that a single dose of ChAd-S-ST induced robust B and T cell immunity and prevented clinical disease, lung infection, inflammation and pathology associated with SARS-CoV-2 infection.

Applications

- Vaccine for COVID-19

Key Advantages

- Non-human adenovirus vector:
 - potential to avoid complication due to pre-existing immunity to human adenovirus
 - improve efficacy
- Spike protein stabilized in pre-fusion conformation- exposes preferable surfaces

Patents

- Patent application has been filed.

Related Web Links

- [Dr. Curiel profile](#)
- [Dr. Diamond profile](#)