Docket #: S20-190

Engineered Nanobodies to Protect against Viral and Microbial Contamination in Closed and Semi-enclosed Spaces

SARS-CoV2 is known to gain entry into epithelial cells through the association of its viral spike protein with the ACE2 receptor, which is widely expressed on epithelial cell types. Targeting the interaction between spike protein and ACE2 by intravenous delivery of antibodies or engineered decoy proteins such as soluble ACE2 receptor are promising approaches towards therapies, particularly in view of early indications that convalescent plasma is also effective. However it is unlikely that many of these therapies will become widely available given the time consuming manufacture and lengthy periods required for clinical testing.

Stanford investigators have an engineered nanobody-based platform for aerosolized dispersal of blocking nanobodies to neutralize viral particles on the exposed surface of the respiratory tract and on inanimate surfaces, e.g. seats, telephones, countertops, knobs, etc., to reduce penetration and infection by airborne virus, for example coronavirus, including SARS-CoV-2. The developed nanobody specifically binds to a conserved domain in the spike envelope protein encoded by SARS-CoV2.

Stage of Development
In vitro, SARS-Cov-2 spike pseudovirus neutralization assay with ACE2 overexpressed HEK-293T cells.

Applications

- Treatment and prevention of Covid-19.
- Similar approach also applies to other infectious respiratory diseases.

Advantages

- High affinity and low dose to prevent Covid-19.
- Fast development and high yield production with established platform.

Publications

- Patent Application Publication: US20230218777A1

Patents

- Published Application: WO2021243005
- Published Application: 20230218777

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