

# DRUG THAT BLOCKS MULTIPLE CORONAVIRUS VARIANTS IN MICE IDENTIFIED

Relevant for: Science & Technology | Topic: Science and Technology- developments and their applications and effects in everyday life

As seen here with microscopy, lung epithelial cells infected with SARS-CoV-2 (left, yellow) were successfully treated with diABZI (right) by Penn Medicine researchers. | Photo Credit: [www.pennmedicine.org](http://www.pennmedicine.org)

Scientists have identified a new drug which is highly effective in preventing severe COVID-19 in mice infected with SARS-CoV-2, and could also treat other respiratory coronaviruses.

[The findings](#), published in the journal *Science Immunology*, suggest that the drug diABZI activates the body's innate immune response, the first line of defence against invading pathogens.

"This paper is the first to show that activating an early immune response therapeutically with a single dose is a promising strategy for controlling the virus, including the South African variant B.1.351, which has led to worldwide concern," said Sara Cherry, a professor at the University of Pennsylvania in the U.S.

"The development of effective antivirals is urgently needed for controlling SARS-CoV-2 infection and disease, especially as dangerous variants of the virus continue to emerge," Cherry, the senior author of the study, said.

The SARS-CoV-2 virus initially targets epithelial cells in the respiratory tract.

As the first line of defence against infection, the respiratory tract's innate immune system recognises viral pathogens by detecting their molecular patterns. The researchers first sought to better understand this effect by observing human lung cells infected with SARS-CoV-2 under the microscope.

They found that the virus is able to hide, delaying the immune system's early recognition and response.

The team predicted that it may be able to identify drugs that could set off this immune response in the respiratory cells earlier and prevent severe SARS-CoV-2 infection.

To identify drugs that would block SARS-CoV-2 infection, the researchers screened 75 drugs that target sensing pathways in lung cells.

They identified nine candidates that significantly suppressed infection by activating STING — the simulation of interferon genes which plays an important role in innate immunity.

The team tested a newly-developed drug molecule called diABZI, which is currently being tested in clinical trials to treat some cancers.

The researchers found that diABZI potently inhibits SARS-CoV-2 infection of diverse strains, including variant of concern B.1.351, by stimulating interferon signalling. Interferons are a group of signaling proteins made and released by host cells in response to the presence of several

viruses.

The scientists tested the effectiveness of diABZI in transgenic mice that had been infected with SARS-CoV-2. Because the drug needed to reach the lungs, diABZI was administered through a nasal delivery. Mice treated with diABZI showed much less weight loss than the control mice, and had significantly-reduced viral loads in their lungs and nostrils, and had increased cytokine production.

The findings provide further support that diABZI stimulates interferon for protective immunity, the researchers said. The study also offers promise that diABZI could be an effective treatment for SARS-CoV-2 that could prevent severe COVID-19 symptoms and the spread of infection, they added.

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